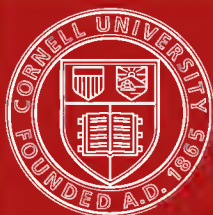

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School buildings and grounds in Nebraska



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A RURAL NEBRASKA SCHOOL HOUSE
The Sutherland School, District No. 20, Washington County

SCHOOL BUILDINGS

AND

GROUND

IN

NEBRASKA

PUBLISHED BY THE
DEPARTMENT OF PUBLIC INSTRUCTION
STATE OF NEBRASKA

WM. K. FOWLER
STATE SUPERINTENDENT

LINCOLN
APRIL 1, 1902

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Introduction

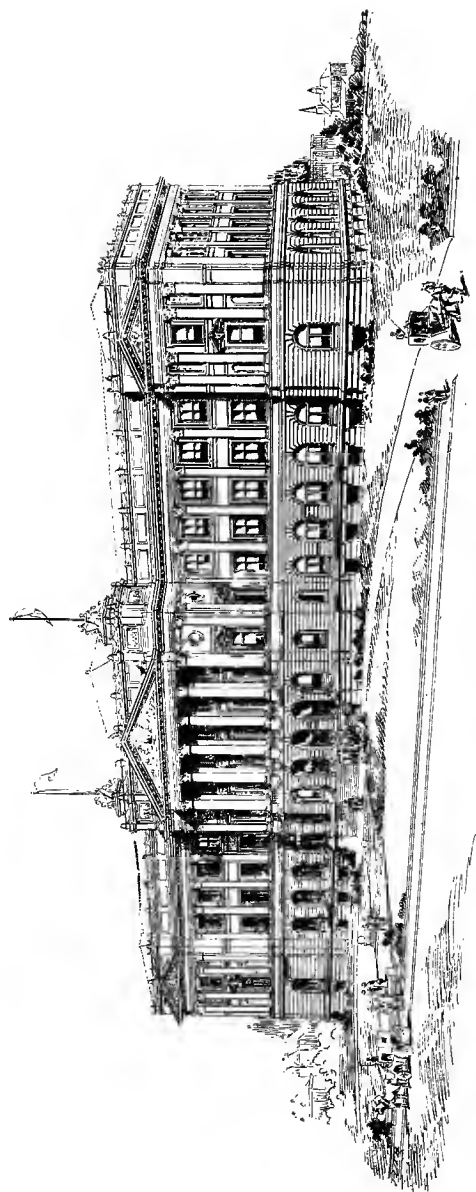
A large number of new schoolhouses have been built in Nebraska during the past year, and the indications are that a larger number will be erected during the coming summer. It is hoped that a still larger number will be remodeled so as to secure better light and a better system of heating and ventilating, conforming to hygienic laws. This publication is issued in the hope that it may contain some help, direct or suggestive, to school boards, superintendents and principals.

WILLIAM K. FOWLER,
State Superintendent.

Acknowledgments

The state superintendent desires to thus publicly express his thanks to many of the teachers, principals and superintendents of Nebraska, and to the secretaries of several boards of education in the state, for their kindness in furnishing photographs or engravings from which the illustrations in this volume are made. The *Youth's Companion* has been especially kind in loaning to the State Department of Public Instruction, without cost, the illustrations used in connection with the articles reprinted from that valuable paper.

To Mr. John Latenser, of Omaha, the state superintendent feels particularly indebted. The superintendent is confident that the entire state of Nebraska will appreciate highly the ground plans, elevations, working drawings and specifications of the one-room schoolhouse reproduced in this volume, and the plans of the two-room and four-room frame and brick buildings that are also reproduced herein. These were all made possible through the kindness of Mr. Latenser.



WING OF NEW HIGH SCHOOL BUILDING, OMAHA
John Latenser, Architect



NEW HIGH SCHOOL BUILDING, OMAHA
John Latenser, Architect

School Buildings in Nebraska

The illustrations in this publication have not been systematically collected, therefore they can hardly be said to be fairly representative of the school buildings in the state. Requests for cuts or photographs of school buildings were sent to all superintendents and principals in the state and were published in the *Nebraska Teacher*. From the city superintendents many cuts were received, and they are used in this volume. County superintendents and village principals sent in many photographs of village and rural schoolhouses, fully three-fourths of which were available for use, and half-tone reproductions from them appear in this volume.

The pictures of sod schoolhouses will attract instant attention, but we hope our readers will not jump to the conclusion that they are the common type of schoolhouse in this state or that they are common in all parts of the state. These pictures will prove as great a curiosity to many of our readers in eastern portions of the state as they are to the inhabitants of Greater New York. As will be seen by Statistical Table No. 1, in the back of this volume, there were last year 464 sod schoolhouses in the state of Nebraska out of a total of 6,773; and since 1893 the number of "soddies" has been steadily decreasing. Very few of the next generation of Nebraskans will have the pleasure of attending school in a Nebraska sod schoolhouse. They might go to school in poorer buildings than one built of sod, however, for it is as warm in winter and as cool in summer as any ordinary schoolhouse, although some of our lady teachers *do* object to the fleas and vermin that sometimes infest such a building. Many of our sod schoolhouses are well finished, nearly all are floored and plastered, and many are finished around the doors and windows on the inside. Slate blackboards, patent desks, maps, charts, a school library, a globe and an international unabridged dictionary may be found in many of them. The better class of them have shingled roofs. A more complete description of several of these sod buildings accompanies the illustrations.

Some parts of Nebraska have more sand than wood or stone, and so have the children. It is not strange when we consider the character of our early settlers that they built schoolhouses when they built their homes, and of the only available material,—the sod of the prairie and sand-hill toughened and bound by the roots of the native grasses, cut out in squares and laid up in walls two feet or more in thickness. Nebraska will maintain the lowest per cent of illiteracy among the states of the Union if it is necessary to educate her children in dugouts, soddies, shanties, and log huts to do it.

We believe the rural and village frame buildings illustrated to be fairly representative of the frame buildings throughout the state in country and town; and the high school buildings, frame, brick, and stone, are an evidence of the pride that our cities take in their schools.



DISTRICT SCHOOL, No. 70, HALL COUNTY



DISTRICT SCHOOL, No. 51, HALL COUNTY



DISTRICT SCHOOL No. 54, CHERRY COUNTY



DISTRICT SCHOOL No. 69, ROCK COUNTY

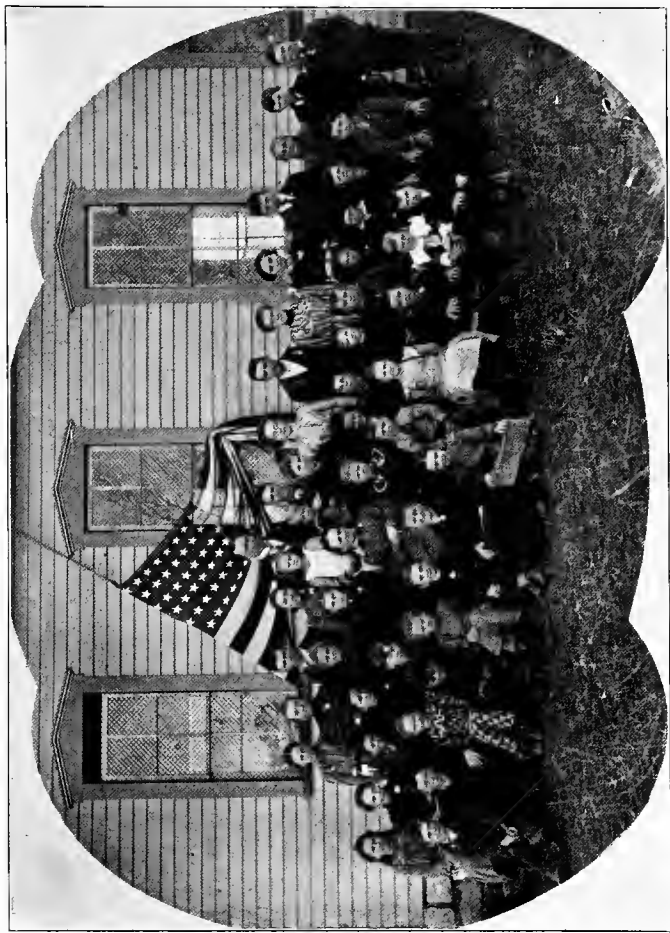
The Country School

The first requisite of a good school is a good teacher, it is true, but the best of teachers may be considerably handicapped by unfavorable environment, while the poorest teachers may do better work if they keep school in a well constructed, nicely furnished, well equipped schoolroom.

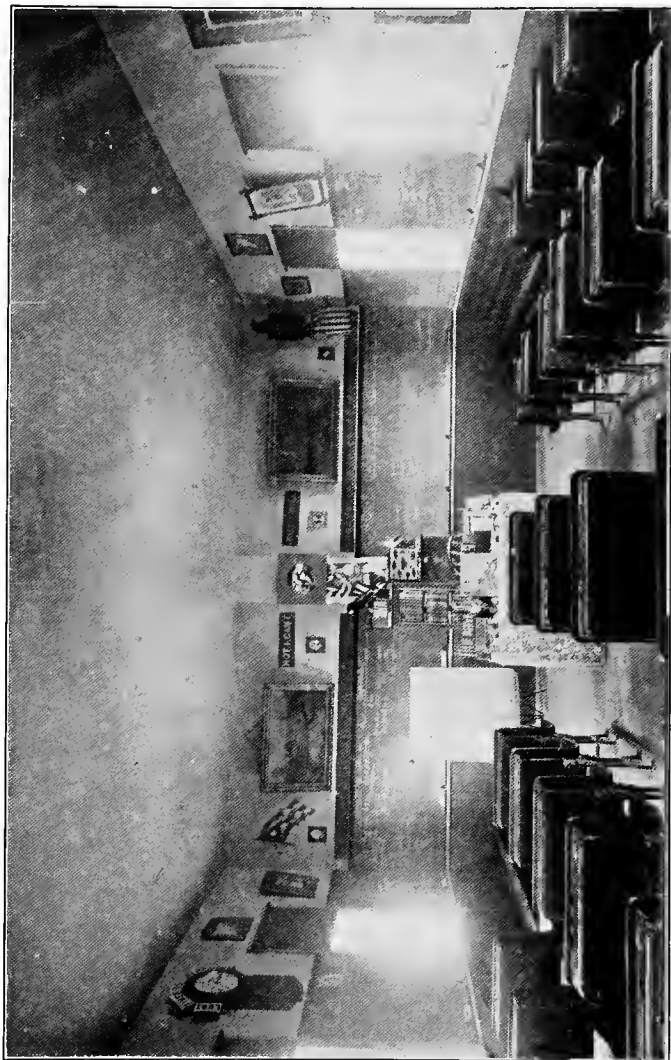
We hear much of the improvement of material school conditions to-day, compared with fifty years ago. The veterans of the Civil War compare the beautiful brick buildings in which their grandchildren attend school with the log houses where they sat on rough-hewn logs with their faces to the wall and their backs exposed to the teacher and the long horizontal wood stove in the center of the room, in the '50's; but these comparisons are too broad and sweeping. The beautiful, well furnished schoolhouses of stone or of brick in our cities and towns should not be compared with the log schoolhouses of fifty years ago, nor even with the little red frame schoolhouse of that time. It is true there is a material improvement in schoolhouses generally, but the improvement is greater and more general in city than in country. In the city more attention is now being paid to sanitary conditions and methods of heating and ventilating, to lighting and seating, and to improved blackboards and charts and better maps, adjustable window shades and curtains and desks, the arrangement of corridors and wardrobes and closets, etc. In the country the improvement is less marked. There are still many rural district schoolhouses built on the two-by-three plan; width two-thirds of the length, a single room without entry or vestibule, two or three widely separated windows in each side, and a door in the center of one end. The blackboard is usually plaster painted black, scanty in amount, and the desks are double patent ones. The wood-box may sometimes be found in one corner of the schoolroom as of yore, but filled with cobs, though more commonly the outdoor coal shed takes its place. Occasionally both are lacking, and the coal and wood or cobs are dumped on the bare ground. The pump may or may not be out of repair, and too frequently the out-buildings are the same dens of vice and hell-holes of contamination and pollution they used to be. Trees and shrubbery are too often lacking. These sad conditions, though not universal nor even general in some parts of Nebraska, are altogether too common. They are the conditions we hope to improve.

According to the School Laws of Nebraska, the legal voters in the common school districts shall, at the annual meeting, determine by vote the number of mills on the dollar of assessed valuation which shall be levied for all purposes, except for the payment of bonded indebtedness, which number shall not exceed twenty-five mills in any year. A part of this twenty-five mills, not in excess of ten mills, may be used for the building, purchase, or lease of a schoolhouse in the district when there are no bonds voted for such purpose. The bonded indebtedness of a district shall not exceed five per cent on the dollar of the assessed valuation. Property in Nebraska is assessed at so low a rate,—one-sixth or one-eighth its real value,—that these limitations often work a hardship on the poorer districts. However, it costs the district but little more to build a schoolhouse properly heated, lighted, and ventilated, than to construct one without providing for these essentials. It costs less to heat and ventilate a properly constructed schoolroom than to heat a poorly constructed one with no provisions for ventilation. It may cost the parents more in the payment of doctors' bills, of medicines, and loss of school attendance, if their children are compelled to attend school in a room neither heated nor ventilated properly. It may cost parents more for oculists' bills and eyeglasses if their children sit in rooms facing windows or with cross lights, or with an inadequate amount of natural light or with the same supplemented by artificial light, than if they attend in a room lighted as it should be. School children cannot begin to do the amount of work in a schoolroom improperly heated, lighted and ventilated that they could do in a schoolroom with these conditions as they should be. This is not theory, but a matter of experience. Neither teachers nor pupils can concentrate their attention upon the matter in hand as they should, in an uncomfortable schoolroom. These poor conditions may not result in the general breaking up of the health of the teacher or pupils, but they may result in a gradual impairment of the health and a derangement of the nervous system that will result in permanent physical injuries.

Teachers generally are easily influenced by their surroundings. There are a few noted exceptions, Mark Hopkins, for instance, that simply prove this rule. A log might serve him in lieu of a modern schoolroom, but it will not do for the average Nebraska school teacher. Children also are always influenced by the schoolhouse,



WASHINGTON SCHOOL, DISTRICT No. 24, NEMAHHA COUNTY



DISTRICT SCHOOL, No. 1, MERRICK COUNTY

its surroundings and the interior. Our experience has always been that a school that was neat and clean in appearance was doing careful, thorough work, with excellent order prevailing, while a dirty, dingy, disarranged schoolroom was invariably a disorderly, inattentive, careless and slipshod school. If the aspect of the school premises is forbidding, it is not surprising that the children are reluctant to go to school and are pleased to get away again as soon as they can. There are too many school buildings and grounds in Nebraska whose appearance is apparently designed to encourage truancy. The condition becomes aggravated when the improvement of residences outruns the improvement of schoolhouses. Children are quick to notice contrasts and to make comparisons. They will compare their dusty, dirty, dingy, smoke-begrimed schoolhouse with its broken plaster, rusty stove and rough, knot-protruding floors, its broken, rattle-trap desks and dirty windows, with their mother's clean, neat, tidy kitchens, with their parents' homes where comforts and conveniences are multiplying, where plate glass windows, cedar trees and other evidences of prosperity and care and forethought attract one's eye as he drives from one schoolhouse to another. The appearance and conditions of the schoolhouse, in which our children spend one-half their waking hours every school day in the year, should be the equal of the same in our homes.

The Sutherland Schoolhouse

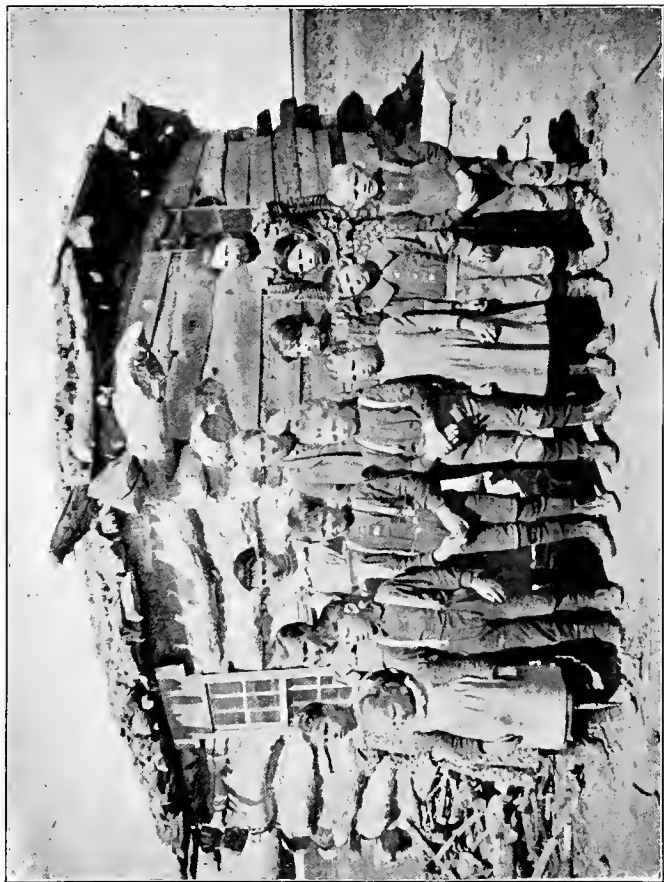
(See Frontispiece)

This is a newly erected district schoolhouse, located about five miles west of Blair. It is located in district No. 20, Washington county, and was erected during the same year as the new Blair high school building, and by the same architect.

In the perspective we see the north side with its six windows, and the west end with the entrance in the southwest corner. The pupils face an unbroken east wall, with the strong, even light of the north entering from the left, and two smaller windows above the blackboard in the rear. Fresh air enters through a grating in the foundation wall near the steps, and is carried by a galvanized iron duct below the floor to an opening below the stove, where it is warmed and distributed. The foul air passes out through the registers in the floor by the north wall and in the wall near the stove. This air heats the floor from below and the ceiling from above. The inlet and the outlets of the air are regulated by dampers. There are two rows of blackboard slates across the front wall, the upper one for the use of the teacher for copies, drills, etc. The teacher, from her natural position in the front of the room, may watch the pupils at the blackboard in the rear of the room and inspect their work, and at the same time "oversee" those at work in their seats. The wardrobe extends along the south side, is lighted by four windows placed high in the wall, and is furnished with sixty double schoolhouse hooks, each with a numbered metal tag.

Fig. 1, a Model Plan, is the floor plan of this schoolhouse. Complete specifications, with ground plan, exterior views and working drawings for the construction of this schoolhouse, are published on the following pages.

Had the building been located on one of the three other corners formed by the intersection of the roads the entrance might have been in the southeast corner of the building instead of the southwest, and the pupils, after passing through the wardrobe, would then enter the rear of the schoolroom, and visitors would enter the front of the room from the entrance. The sunlight enters this schoolroom in the afternoon above the heads of the pupils. A door or window near the east end of the wardrobe, in the southeast corner



DISTRICT SCHOOL, No. 19, FRONTIER COUNTY, 1899

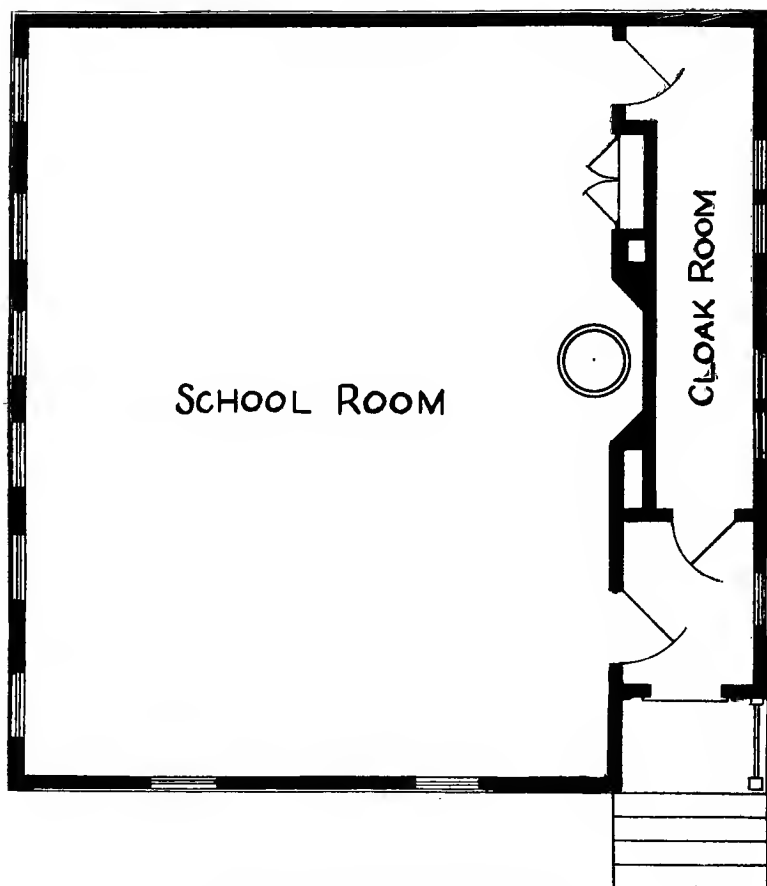
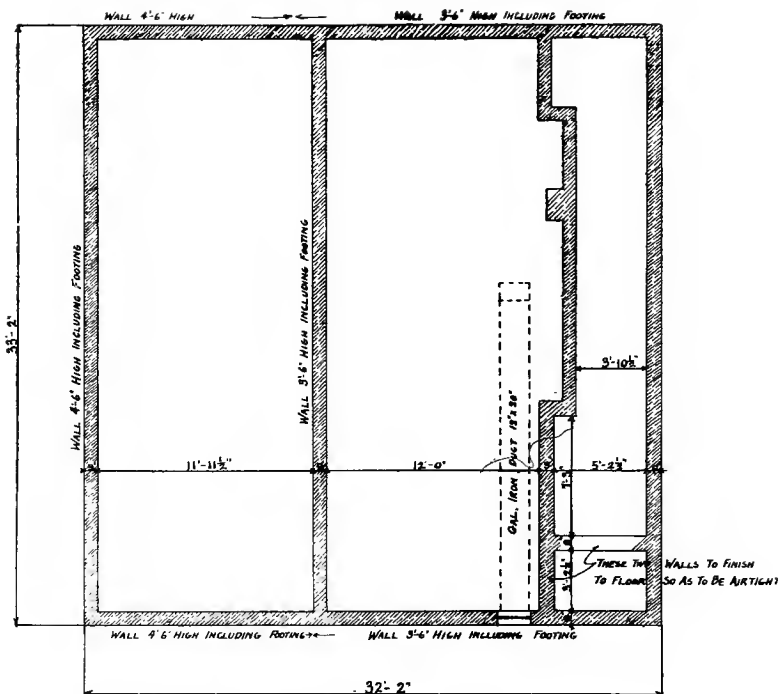


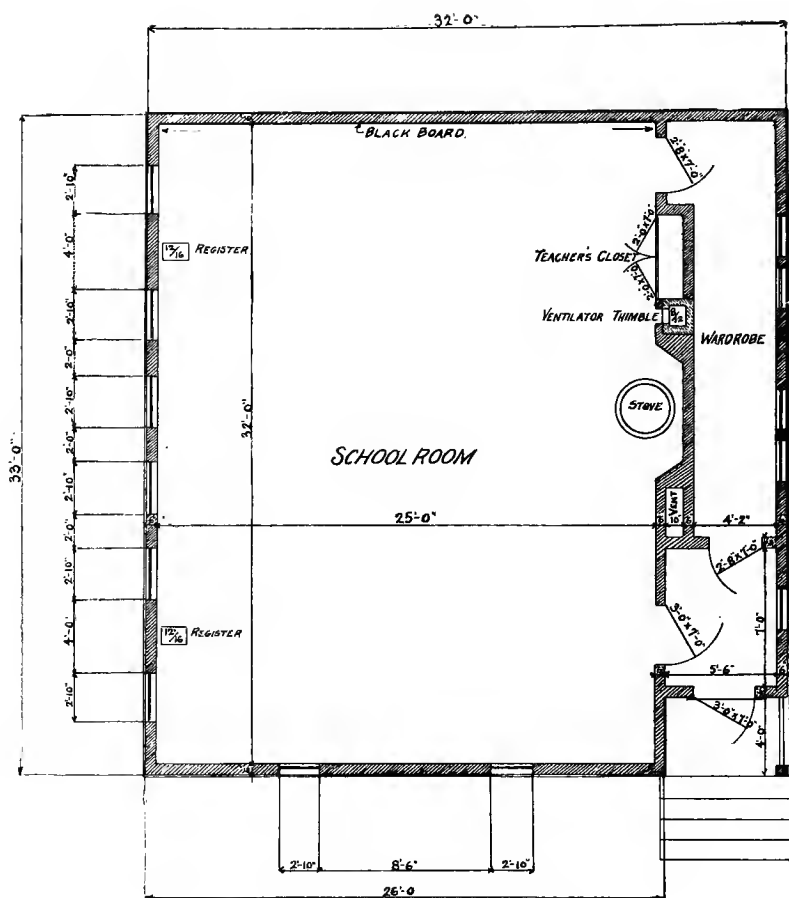
FIG. 1 — A MODEL FLOOR PLAN
The Sutherland Schoolhouse



~ BASEMENT PLAN ~

1/4" INCH = 1 FOOT

A RURAL SCHOOLHOUSE



A RURAL SCHOOLHOUSE

of the building, would permit the early morning sunlight to stream across the schoolroom through the inner door.

But this building, though not perfect, is the best country schoolhouse in Washington county, and, we believe, in many Nebraska counties. It is substantial in construction and beautiful in interior finish.

Since its completion two other rural schoolhouses have been erected in Washington county on the same general plan. The original plans of the Sutherland schoolhouse are now on file in the office of the State Superintendent of Public Instruction at Lincoln.

A Rural Schoolhouse

Brief Specifications for Work and Material Required for the Erection of a One-room Schoolhouse, in Accordance with Accompanying Ground Plans, Elevations and Working Drawings

The Original of this Building was Built in District No. 20, Washington County, Nebraska.
(See Frontispiece)

This building may be erected in the eastern portion of the state, complete, for \$1,000.00. The original plans are now on file in the office of the State Superintendent of Public Instruction at Lincoln.

GENERAL CONDITIONS

THE BOARD.

The Board reserves the right to reject any or all bids. The Board will superintend the work, through the Architect or an especially appointed superintendent. The Board reserves the right to make any changes, omissions, or additions in and to the building, without voiding these specifications, the contract, or bond.

The Board will recognize no extra work and will not pay for extra work, unless such work has been ordered beforehand by resolution of the Board.

No alleged verbal agreement at variance with the drawings, specifications, etc., will be recognized. The Board will insure its

equity in the building from time to time as payments are made, but the Contractor must insure his interest therein at his own cost.

THE CONTRACTOR.

The Contractor will be responsible for the building until its acceptance by the Board, and must make good all injuries sustained during construction from whatever cause. The Contractor must show receipts (if the Board elects to ask for them) before each payment.

The Contractor must give a bond with two responsible sureties as provided by law, subject to the approval by vote of the Board.

The Contractor must finally deliver the building whole, perfect, and clean, within the contract time, and must correct all defects discovered during the first month of use, unless the same are no fault of his.

EXCAVATION.

The Contractor must visit the site and examine same. The height of the first floor will be given, and the Contractor must do all necessary excavation to bring the walls below frost. He must remove 6 inches of the black earth under the building, to prevent decay of vegetation under the building.

BRICK WORK.

The entire brick work, including chimney, is to be built of good, hard, sound brick, to be laid straight and true, neatly pointed up and to be washed down upon completion. There is to be a 9-inch brick wall extending under all interior wood partitions, for the support of partitions and floor joists.

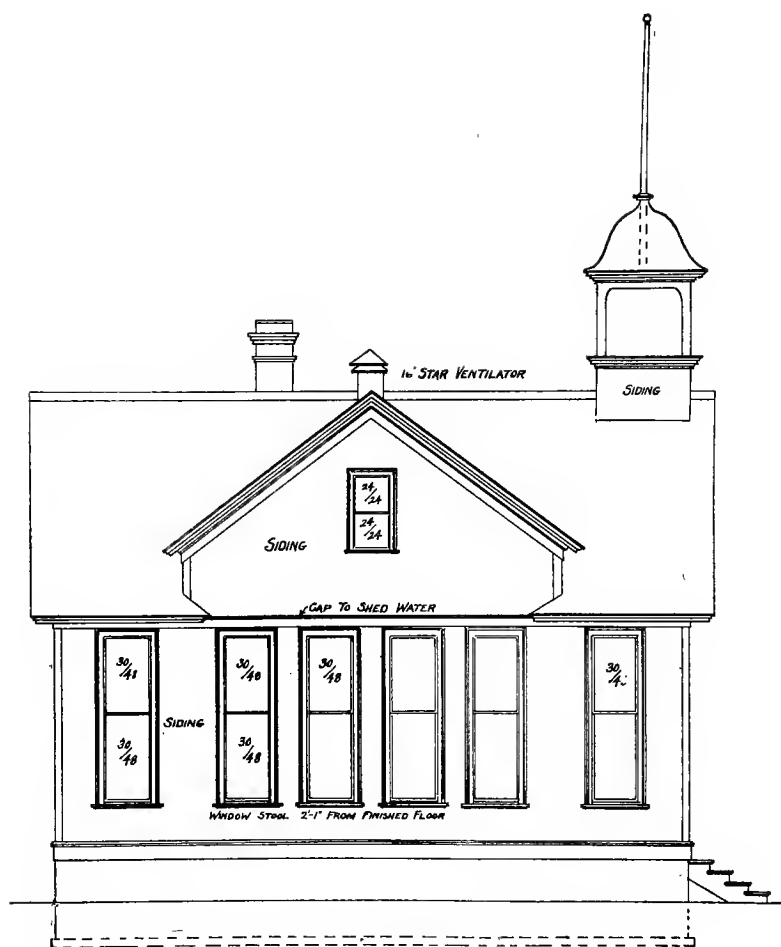
The smoke flue is to be plastered on the inside and is to be 12 x 12 inches in size; it is also to be plastered on the outside, where it passes through the ceiling and roof.

All wood is to be kept from the flue 1 inch clear. Smoke flue is to have an 8-inch thimble for furnace pipe.

PLASTERING.

Lath all walls and ceilings with No. 1 white pine or cypress lath, with $\frac{3}{8}$ -inch spaces, breaking joints every seventh lath.

Plaster all walls and ceilings, including inside of teacher's closet, three coats; the first two coats to be hard plaster of an improved manufacture approved by the Board, and the last coat to be a Plas-



~ NORTH ELEVATION ~
A RURAL SCHOOLHOUSE

ter Paris finishing coat. All plastered corners are to be rounded. Care is to be taken that plastering which will receive artificial blackboard is absolutely straight and true.

The wall which will receive blackboard is to be plastered as above specified, as if no blackboard were to be used. If natural slate blackboard is used, the first two coats of plastering are to be put on ready for finishing coat, and the finishing coat behind natural slate blackboard is to be omitted.

Plastering is to extend tight up against window jambs and door jambs and down to floor behind base everywhere, to make the building warm.

CARPENTER WORK.

Floor joists are to be 2 x 12 inch and ceiling joists 2 x 10 inch yellow pine, sound, dry and well-seasoned. All other framing lumber to be white pine or yellow pine, sound, dry and well-seasoned. Joists and rafters are to be in one length.

Valleys are to be in two pieces 2 x 8 inches each, thoroughly spiked together. Exterior studding is to be 2 x 6 inches, 12 feet long. Interior studding is to be 2 x 6 inches, 12 feet long. Wall plate for exterior walls is to be 8 x 8 inches halved and pinned at corners, and mortised for joists. All sills for interior walls are to be 2 x 8 inches.

Plates for exterior studding are to be 2 x 6 inches, double, and plates for interior studding to be 2 x 6 inches, double. All corners and angles are to be built up solid, no lath to run through. All joists and studdings are to be 16 inches from center to center.

Put double studding on each side of each door and window opening. Schoolroom floor is to have one row of cross bridging 1 x 3 inches.

Every pair of rafters is to have a 2 x 4 inch cross tie 8 feet long. The valleys will brace the roof in the other direction.

TOWER.

Tower is to have bell deck, covered with I.X. tin, and to have 3 x 3 inch scuttle, and also a scuttle in the ceiling of the schoolroom immediately under tower.

The corner posts of the tower are to extend down to the top of ceiling joists and to be braced. Ceiling joists under inside tower

posts are to be treble, and the roof of tower is to be thoroughly cross-braced.

PORCH.

Porch is to be built as shown, of white pine, with $\frac{7}{8}$ x 4 inch white pine flooring, and to have white pine steps $1\frac{5}{8}$ inch thick, with white pine railing and balusters.

Ceiling of porch is to be first lined with roof sheathing, then to have one layer of straw paper, and then to be covered with $\frac{7}{8}$ x 4 inch white pine ceiling.

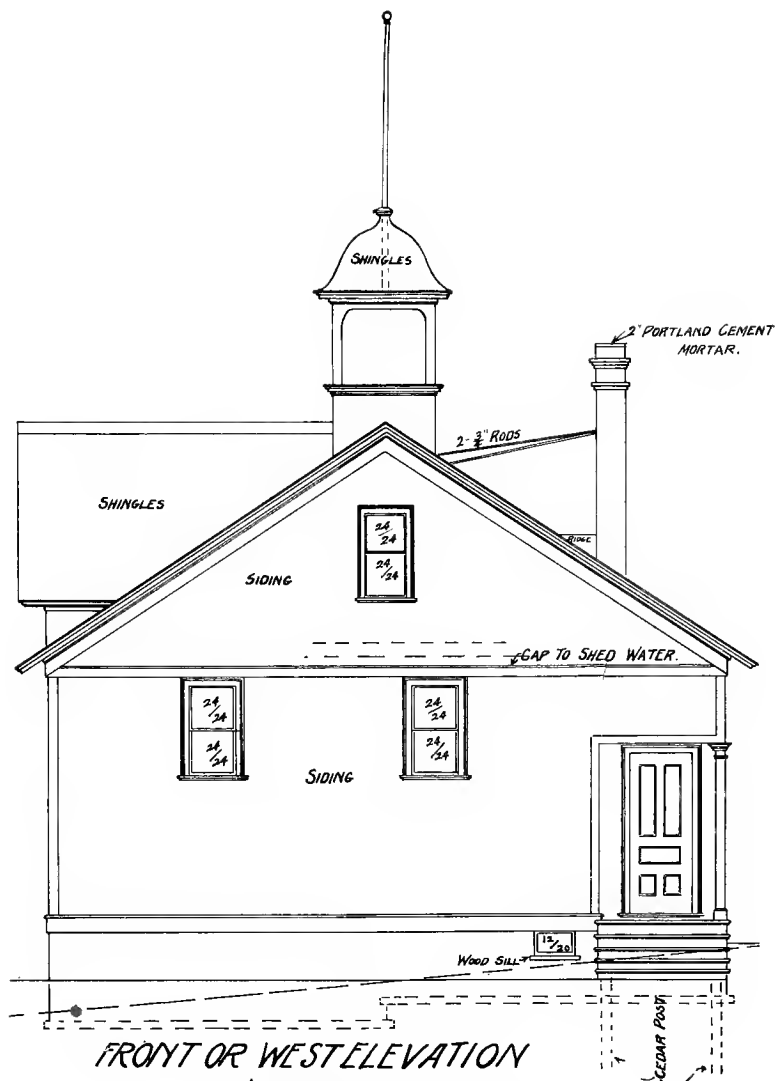
VENTILATION.

The ventilating flue is to be lined up with $\frac{5}{8}$ x 6 inch yellow pine ceiling, and is to extend from under side of floor joists to attic floor. On top of roof build a 12-inch globe ventilator of galvanized iron.

The ventilating flue is to have sliding board in schoolroom so arranged as to close off the ventilating flue entirely when school is not in session.

Below the second and fifth windows put a 10 x 10 inch ventilating register in the floor. The foul air will then pass directly through these registers down between the earth and the floor towards the ventilating flue, pass up through the ventilating flue to the attic, and spread all over the attic; thence the air will pass out through the globe ventilator in the top of the roof. In the outside wall below the floor build an opening 1 foot 6 inches x 1 foot 6 inches, and run a galvanized iron duct 1 foot 6 inches x 1 foot 6 inches under the floor to the under side of the furnace. Under the furnace cut a hole in the floor 24 inches in diameter and permit the air to strike against the bottom of the furnace. Provide a tight door in the opening of the outside wall so the cold air may be shut off from the school when it is not in session. (An ordinary cast iron furnace costing about \$45.00 f. o. b. is to be placed over the opening in the floor. The furnace is then to receive a galvanized iron casing extending from the floor to the top of the furnace. The cold air will then strike the furnace, where it will be warmed, rise between the furnace and the galvanized iron casing and pass out into the schoolroom. The furnace, casing and smoke pipe will cost not to exceed \$80.00 set in place.)

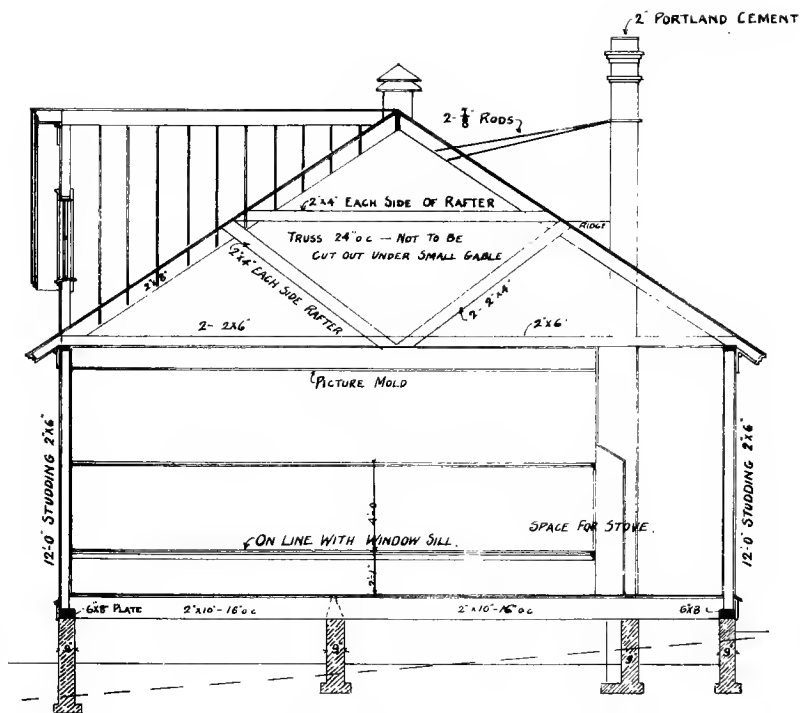
By the above method the foul air leaves the room at about 68 or



FRONT OR WEST ELEVATION

$\frac{1}{4}$ INCH = 1 FOOT.

A RURAL SCHOOLHOUSE



~ CROSS SECTION ~

$\frac{1}{4}$ " INCH = 1 FOOT.

A RURAL SCHOOLHOUSE

70 degrees, will be drawn under floor and warm the floor, and it will be drawn through the ventilating flue to the attic, thereby warming the ceiling of the schoolroom.

SHEATHING.

Cover all outside walls, entire roof, tower and entire floor with No. 1 sheathing.

PAPER.

Cover sheathing on all outside walls with one layer of good building paper (not tar paper), and cover the entire roof sheathing with one layer of tar paper. All paper is to be lapped 2 inches.

SHINGLES.

Cover the entire roof and tower with first clear red-wood or cypress shingling, laid 4 inches to the weather. Each shingle is to have two galvanized iron shingle nails.

The shingles are to be dipped for two-thirds their length from the bottom up, into best quality Creosote Shingle Stain.

TIN.

Valleys and bell deck are to be lined with I.X. tin 14 inches wide.

RIDGES.

Ridges are to be formed with two $\frac{7}{8}$ x 5 inch boards.

CORNICE.

Cornice is to be as shown on drawing. The eaves are to be lined with paper and $\frac{7}{8}$ x 4 inch white pine ceiling.

OUTSIDE FINISH.

Water table is to be $1\frac{1}{8}$ inches x $9\frac{1}{2}$ inches high, to have $1\frac{1}{8}$ x 3 inch cap and $\frac{7}{8}$ quarter round underneath corner board. Window casings and door casings are to be $1\frac{1}{8}$ inches thick and 5 inches wide.

Window sills are to be $1\frac{3}{4}$ inches thick. Outside window casing is to be so placed as to permit of storm sash at a later day. Care is to be taken that the building paper extends under all water tables, corner boards, door and window casings.

SIDING.

All outside studdings are to be covered with narrow siding with $\frac{1}{2}$ inch lap. Siding is to be white pine or red wood.

INTERIOR FINISH.

Cover all floors with $\frac{7}{8} \times 4$ inch tongued and grooved No. 1 yellow pine flooring; all joints to be smoothed after laying. As soon as laid the floor is to receive one coat of boiled linseed oil mixed with 25 per cent turpentine.

LADDER.

Provide a ladder from attic to bell deck.

DOORS.

The outside door is to have double strength glass in upper panel. It is to be made of two thicknesses of white pine $1\frac{1}{8}$ inch each, making the door $2\frac{1}{4}$ inches thick, to be paneled and flush moulded. All inside doors are to be No. 1 white pine stock doors with five panels, hand smoothed for oil finish.

The two teacher's closet doors are to be $1\frac{1}{8}$ inches thick, to have three panels each.

JAMBS.

Outside door jamb is to be $1\frac{5}{8}$ inches thick, rebated. Inside door jamb is to be $\frac{7}{8}$ inch thick, and is to have door stops.

TEACHER'S CLOSET.

Teacher's closet is to have seven shelves 14 inches wide, to be put on ratchets, so as to make them movable.

WINDOWS.

Windows are to have $1\frac{1}{8}$ inch yellow pine pulley stiles, $1\frac{3}{8}$ inches thick, to be filled with D. S. (double strength) glass.

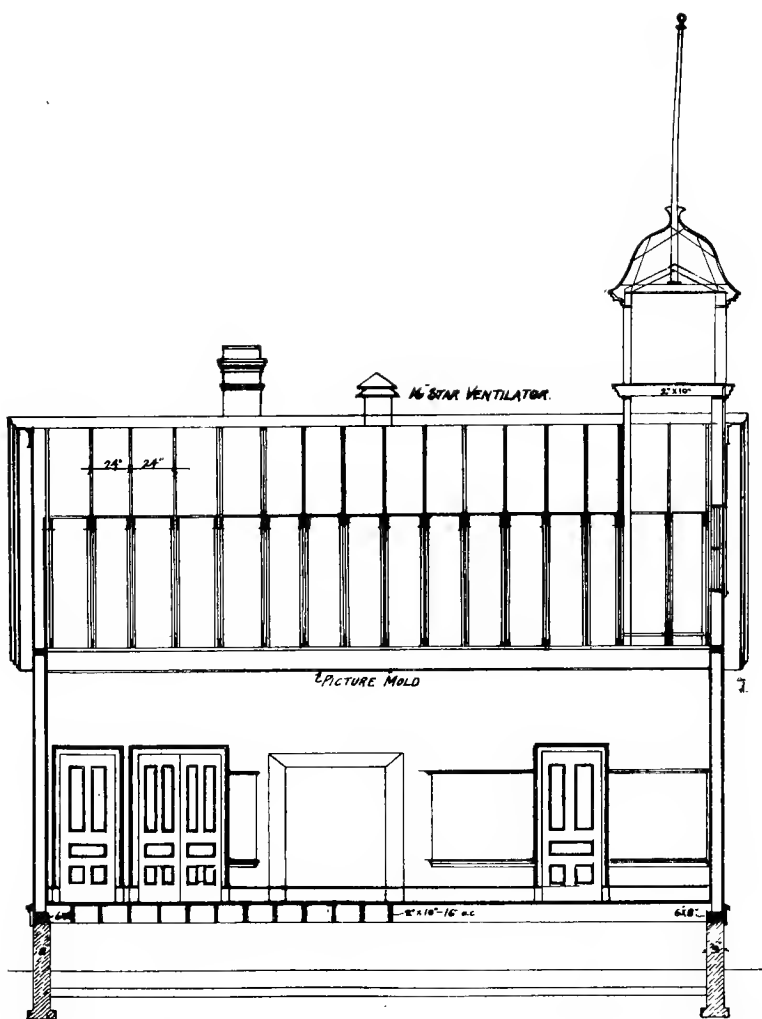
Sash is to be hung to cast iron weights with $\frac{1}{4}$ inch Sampson or Silver Lake cord, to have $2\frac{1}{4}$ inch anti-friction axle pulleys, and all windows are to have $1\frac{1}{8}$ inch stool.

CASING.

Doors and windows are to have $\frac{7}{8} \times 5$ inch casing with plinth at bottom and to be mitered on top.

Base is to be $\frac{7}{8} \times 7$ inches, to have $\frac{7}{8} \times 3$ inch mould on top and quarter round at bottom.

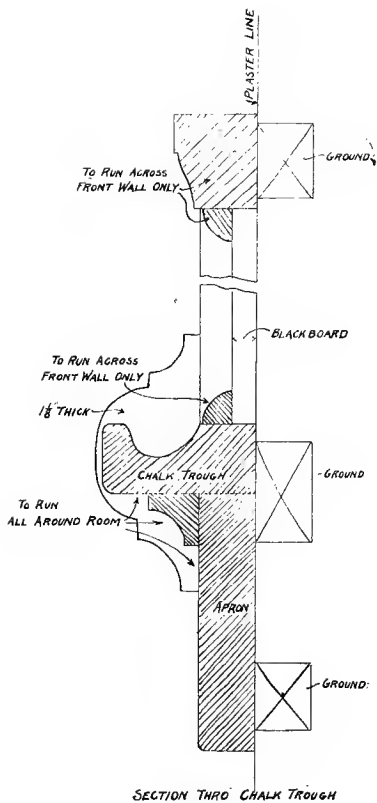
Chalk trough is to run all around room and to be $1\frac{1}{8}$ inches thick, to be hollowed for chalk, to project $2\frac{1}{2}$ inches, and to have $\frac{7}{8} \times 5$ inch apron.



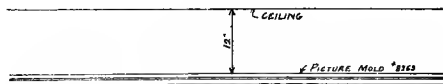
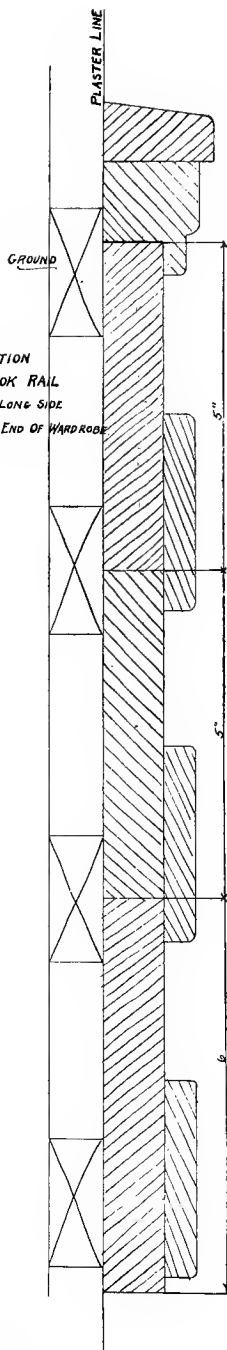
~ LONGITUDINAL SECTION ~

$\frac{1}{4}$ INCH = 1 FOOT.

A RURAL SCHOOLHOUSE



SECTION
THRO' HOOK RAIL
TO RUN ON LONG SIDE
AND ALONG ONE END OF HARDWARE



PICTURE MOULDING.

Run picture moulding all around school room, level with the top of windows.

INTERIOR FINISH.

All interior finish, with the exception of doors, is to be best quality yellow pine, hand smoothed for oil finish.

PAINTING.

Paint all tin immediately after laying and before covering, with two coats of approved mineral paint.

Paint all exterior woodwork with three coats of pure lined oil, pure white lead and best English pigments, and color as selected.

The first coat of paint is to be $\frac{1}{2}$ French ochre, $\frac{1}{2}$ white lead and oil. After first coat all nail holes and other defects are to be puttied.

Varnish all interior woodwork three coats; first coat is to be a liquid filler, second and third coats a good standard varnish, list price not less than \$2.50.

Filler and first coat are to be rubbed down, last coat is to be flowed on.

BLACKBOARDS.

Blackboards will be put on by the Board, and are not to be included in this contract.

HARDWARE.

The Carpenter will furnish complete and will put on all hardware. Each window is to have a heavy sash lock, and one flush sash lift. Front door is to have $4\frac{1}{2} \times 4\frac{1}{2}$ inch lock with three steel tumblers, two keys, and three $4\frac{1}{2} \times 4\frac{1}{2}$ inch steel hinges.

Each inside door is to have one tumbler lock and two 4×4 inch steel hinges.

Teacher's closet is to have one tumbler lock to one leaf, the other leaf to be hooked to shelf, each door to be hung with two $3\frac{1}{2}$ inch \times $3\frac{1}{2}$ inch steel hinges.

All locks are to have solid knobs, elongated escutcheons. All hardware above specified is to be bronzed.

Model Plans for Village Schools

One who looks through this book carefully will be surprised at the difference in the appearances of the school buildings in the villages of the state. It is plain to be seen that many of our school buildings are creatures of the imagination of architects with no knowledge of the actual needs of the schoolroom and with little care or forethought for the comforts and conveniences of the school children. Many of the buildings, however, that present a very respectable appearance in perspective possess abominable floor plans. Within the rooms, crosslights predominate, the light enters the room from the right, or from the right and rear, or from three sides, and in no inconsiderable number of schoolrooms in Nebraska the wall in front of the children is broken by one or more windows. In many cases the front wall is also broken by doors. Such a thing as a teacher's closet is unheard of, and the children hang their wet, steaming wraps, often with the odors of the kitchen about them, in the schoolroom.

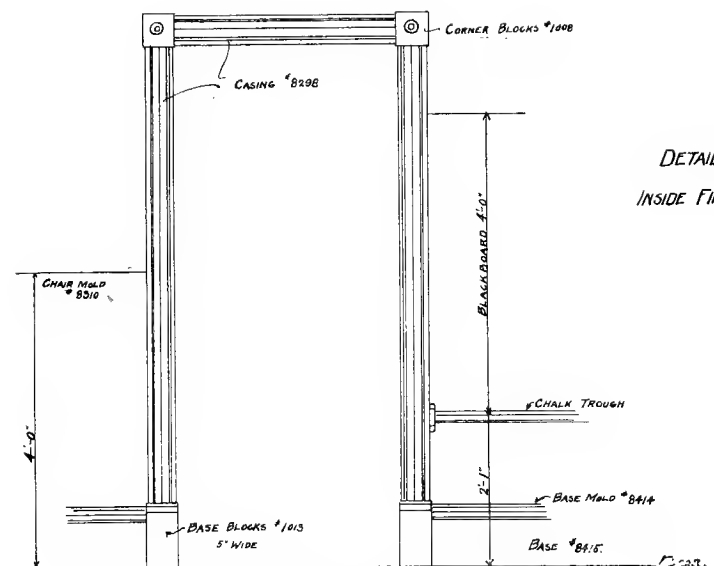
The accompanying plans are designed to show how village school buildings containing two and four rooms may be constructed so as to avoid these difficulties.

A MODEL TWO-ROOM FRAME SCHOOL BUILDING

Here are the plans of a model two-room frame building for a small village or a thickly settled rural community. It is a two-story building, and may be heated with stoves or furnaces arranged according to the specifications for a rural schoolhouse published elsewhere in this volume. Read carefully the description of the Sutherland schoolhouse illustrated in the frontispiece. At any time in the future a third room may be added according to the first floor plan, or two rooms may be added according to the first and second floor plans.

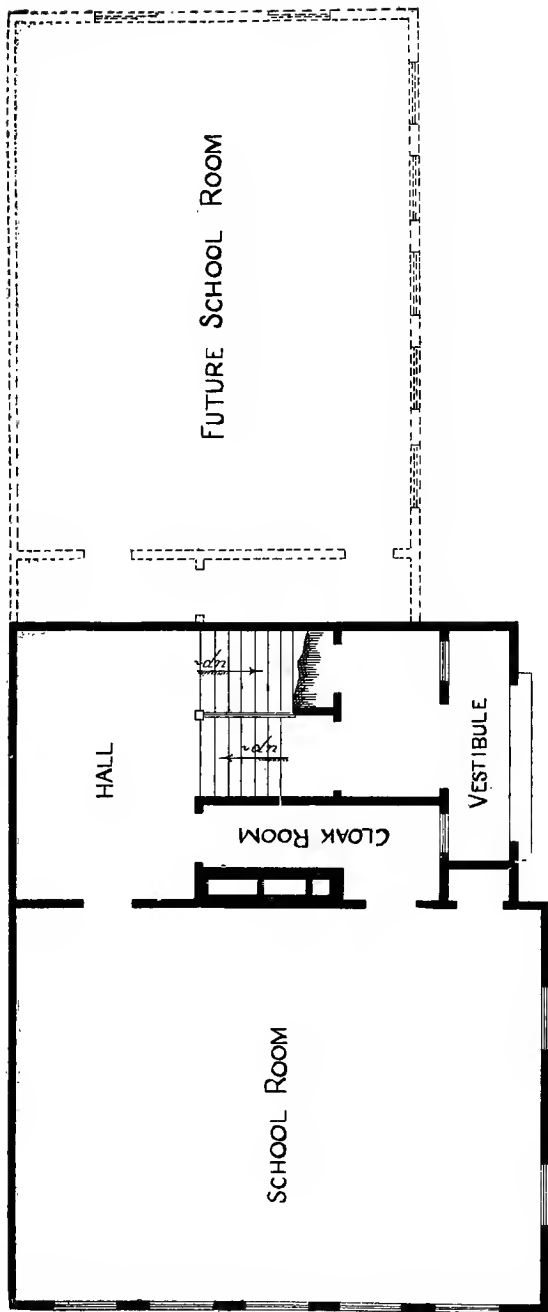
A MODEL TWO-ROOM BRICK SCHOOL BUILDING

These plans vary slightly from those of the frame building just described. Two cloak rooms are here provided for each schoolroom, one cloak room for each sex. Should future schoolrooms be constructed at any time, each room would be restricted to one cloak room. The shading of the walls indicates windows or openings



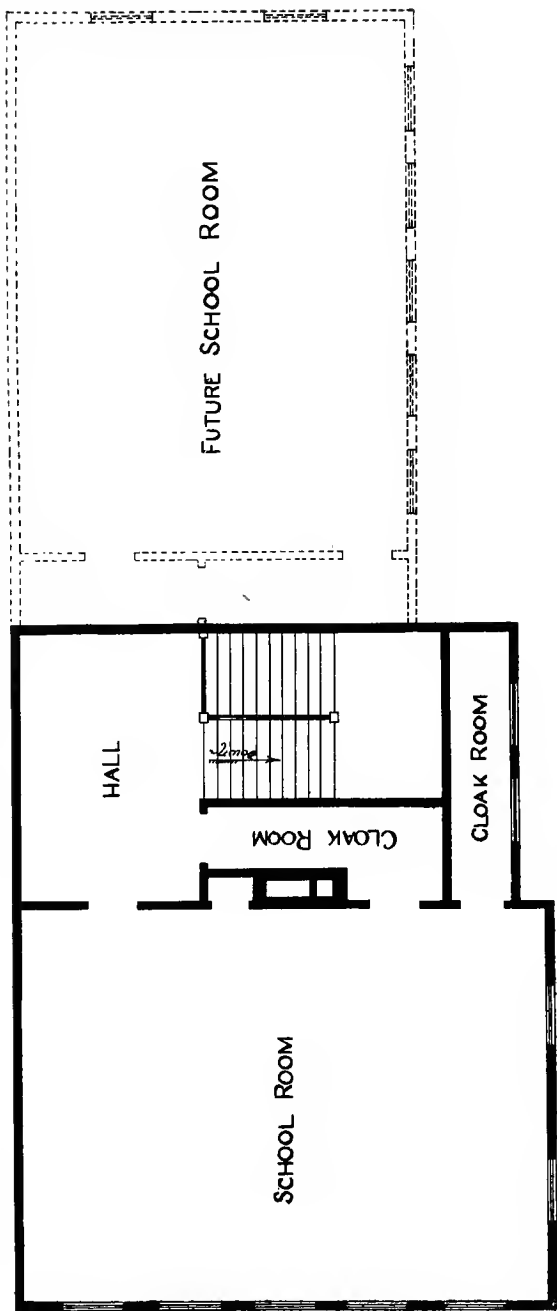
DETAILS OF
INSIDE FINISH.

A RURAL SCHOOLHOUSE



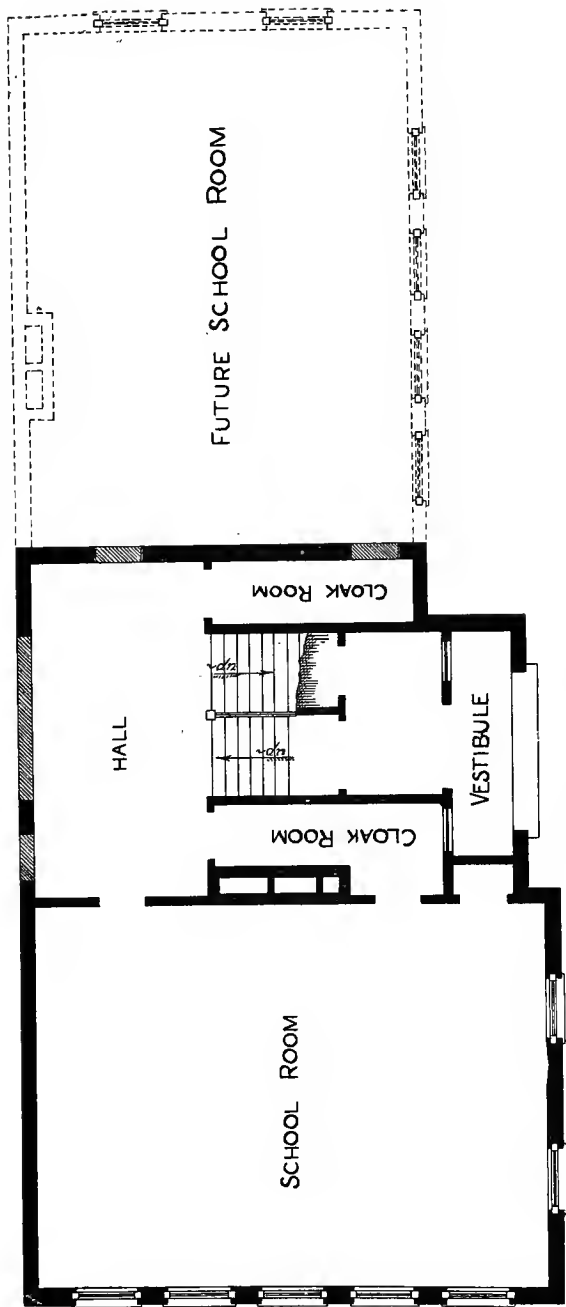
FIRST FLOOR PLAN

A MODEL TWO-ROOM FRAME SCHOOL BUILDING



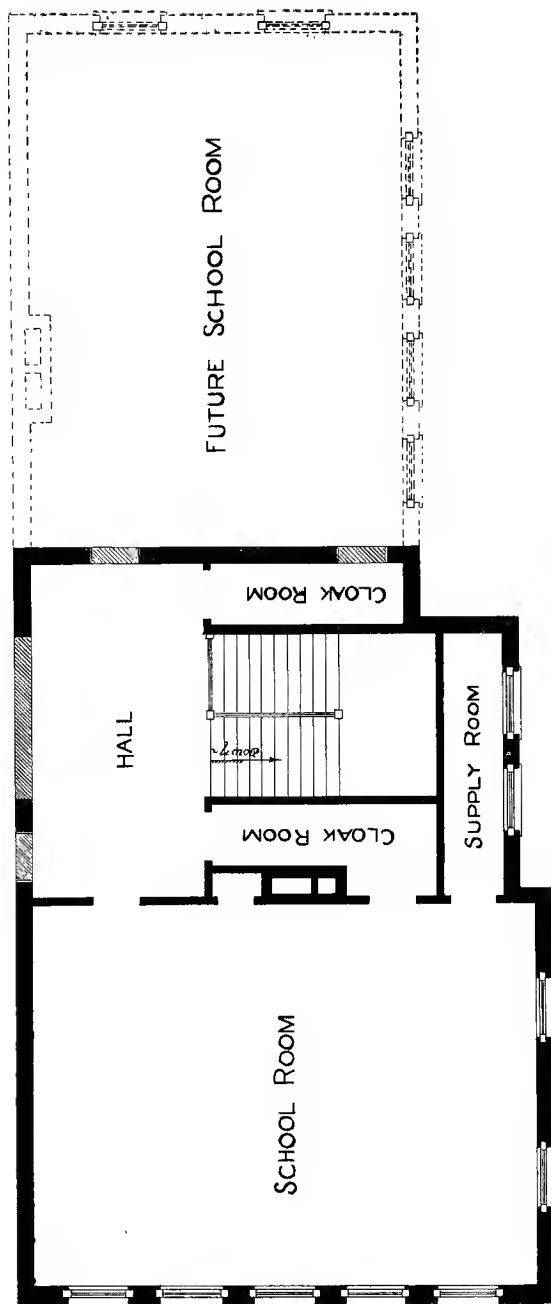
SECOND FLOOR PLAN

A MODEL TWO-ROOM FRAME SCHOOL BUILDING



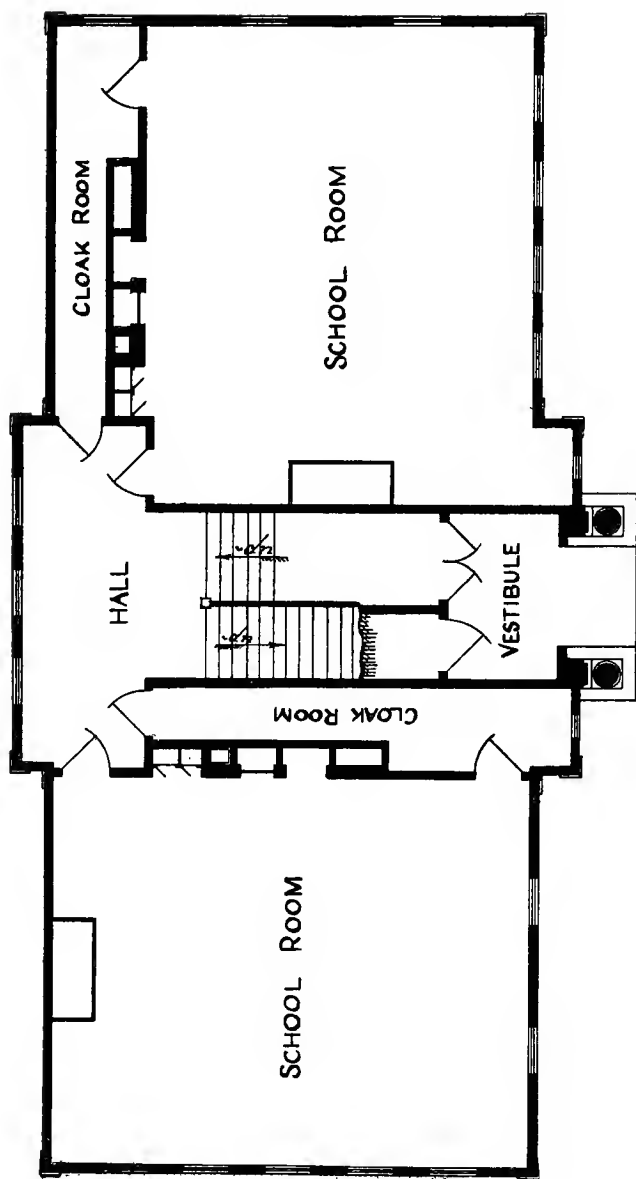
FIRST FLOOR PLAN

A MODEL TWO-ROOM BRICK SCHOOL BUILDING



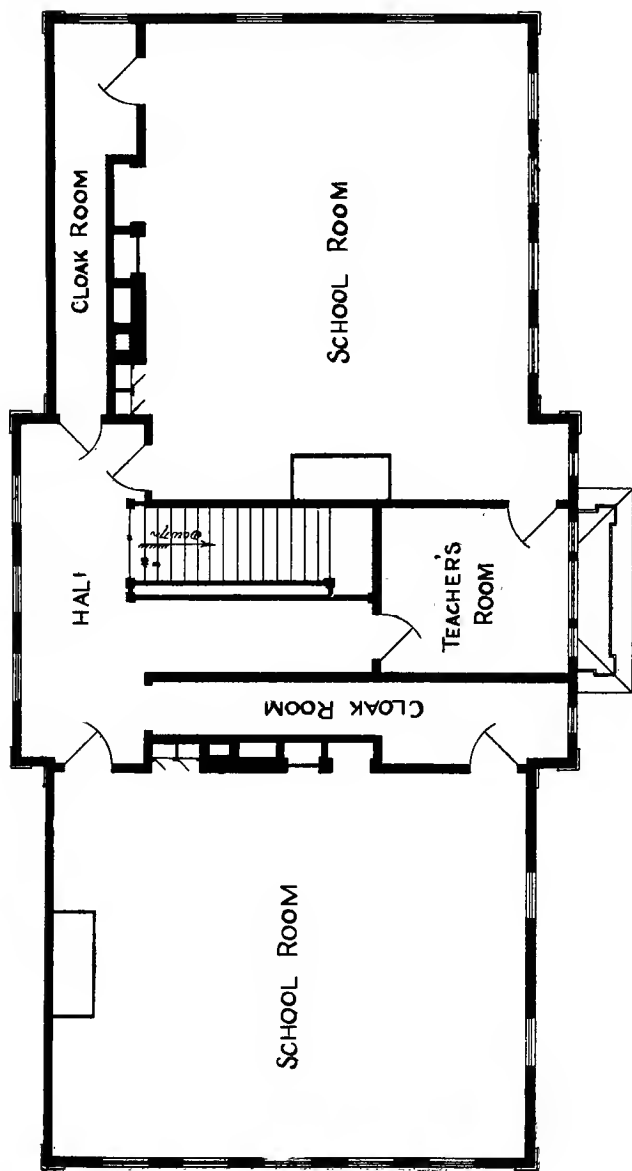
SECOND FLOOR PLAN

A MODEL TWO-ROOM BRICK SCHOOL BUILDING



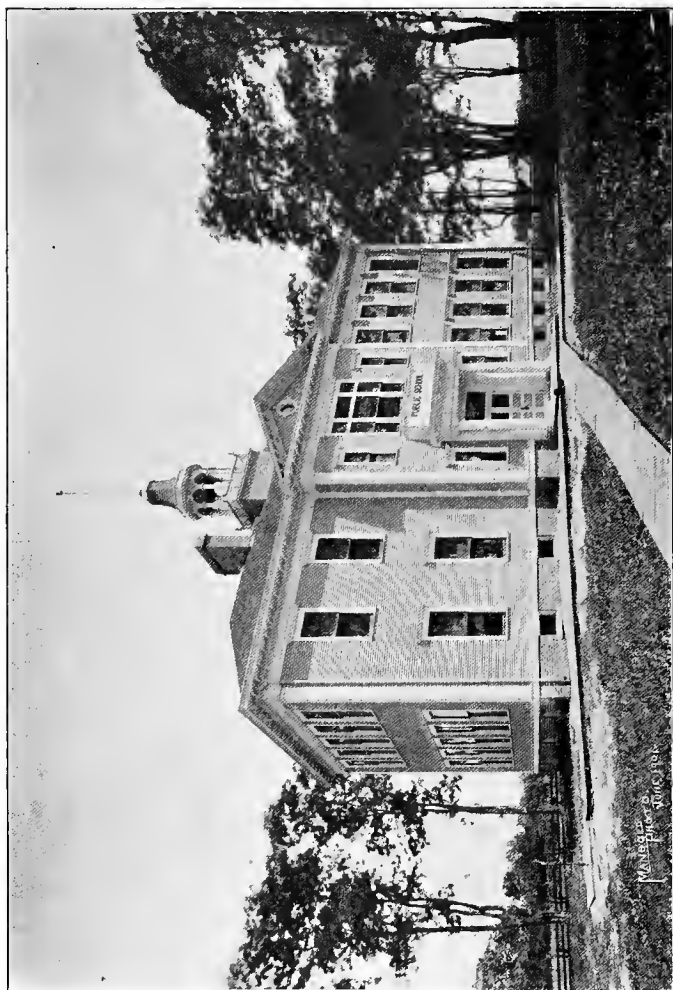
FIRST FLOOR PLAN

A MODEL FOUR-ROOM FRAME SCHOOL, BUILDING



SECOND FLOOR PLAN

A MODEL FOUR-ROOM FRAME SCHOOL BUILDING



CALHOUN PUBLIC SCHOOL

that may be bricked up with the construction of the original two rooms, but which may later be converted into doors or windows. As the rear walls of both the frame and brick plans have no openings whatever, it would not be a difficult matter to construct the future schoolrooms indicated on the plans, and then again double the capacity of the building by adding as much more on the rear side, remodeling the roof and opening passage ways from the rear of the halls. The possibility of thus increasing to eight rooms is reserved more particularly for the following plans. In Nebraska villages it is always wise to make provision for doubling the capacity of the school buildings at any time without necessarily doubling the expense of construction.

A MODEL FOUR-ROOM FRAME SCHOOL BUILDING.

This is practically the Calhoun school building illustrated herein. This building was erected last year at a cost of about \$6,000. As may be seen by the plan, it contains ventilating flues for all the schoolrooms. Each room is similar in its arrangement to the one room in the Sutherland schoolhouse, in district No. 20 of the same county in which Calhoun is located—Washington. District No. 20, Calhoun, and Blair are all in Washington county, and their new buildings were all designed by the same architect, Mr. Latenser. There is practically no difference in the interior point of view or in the arrangement of the Sutherland schoolroom, any schoolroom in the Calhoun building, and any schoolroom in the new Blair high school building. They are all arranged with the windows at the left of the children and an unbroken front wall before them.

A MODEL FOUR-ROOM BRICK SCHOOL BUILDING.

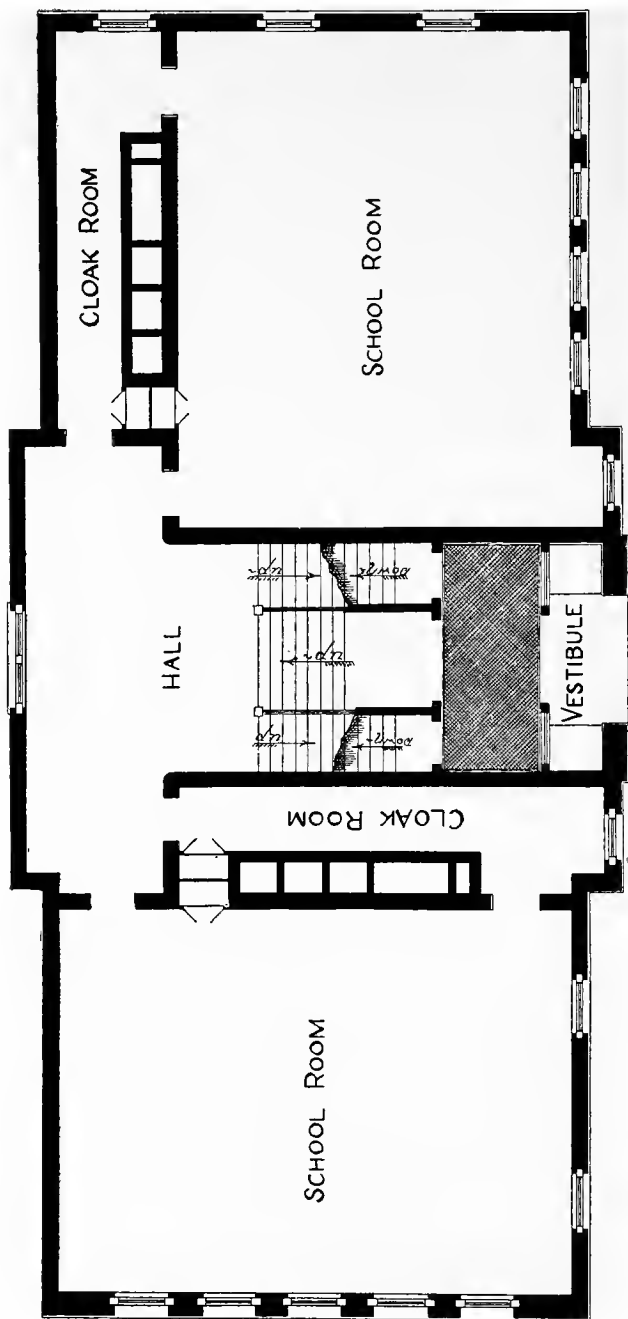
These plans differ but little from those for the four-room frame building, but the interior walls, like the exterior, are designed to run down to the foundation. For explanation of this, see the description of the Blair high school building. The capacity of this building may be doubled by duplicating it on the rear side, remodeling the roof, and converting the double window at the rear of the hall into a double door or opening it into an archway.

School Site

In selecting a site for a school building the principal items to be considered are size, soil, drainage, sightliness and location in the district. One acre of ground is little enough,—two or three acres would be better,—but the depth of the lot should exceed the width by about one-third. The front part of the grounds should be sodded with blue grass and planted with hardy shade trees, not too close to the building. The ground should, if possible, be sloping toward the road or street, with no depressions. If the ground is quite level, artificial drainage should be resorted to.

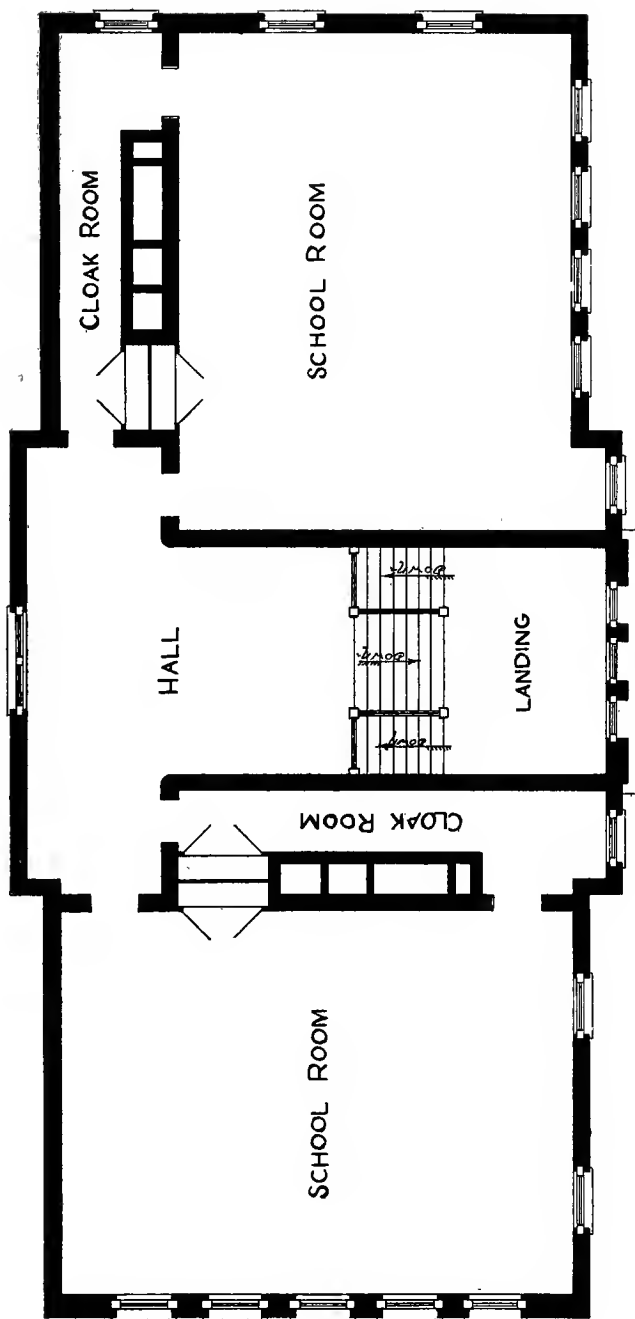


FRANKLIN PUBLIC SCHOOL



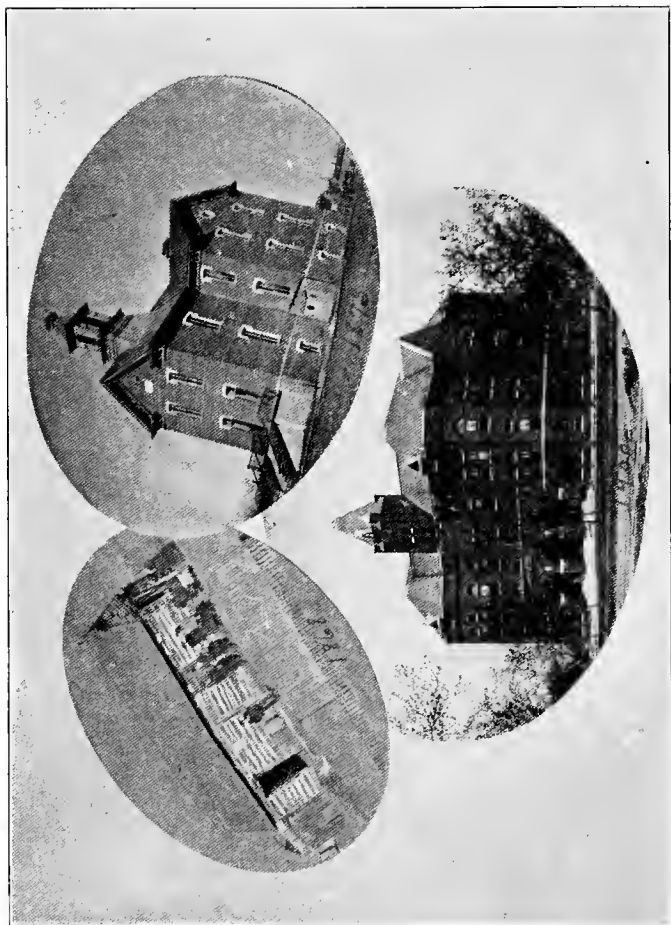
FIRST FLOOR PLAN

A MODEL, FOUR-ROOM BRICK SCHOOL BUILDING



SECOND FLOOR PLAN

A MODEL FOUR-ROOM BRICK SCHOOL BUILDING



THREE NORTH PLATTE HIGH SCHOOLS

Seating

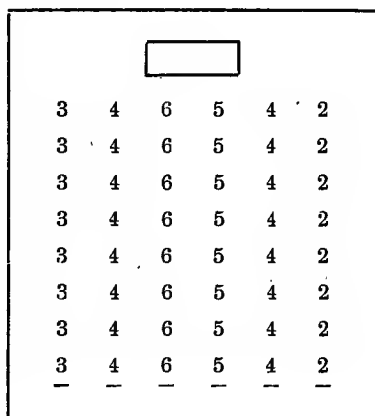
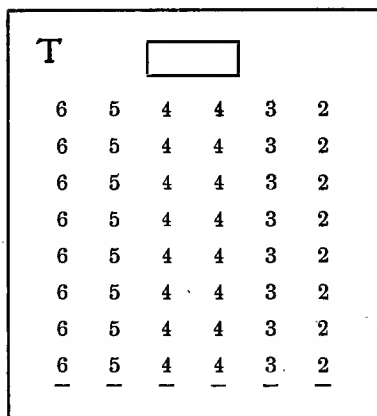
Even when school buildings are properly constructed, and school-rooms are lighted as they should be, much of the good that should result therefrom is counteracted by an improper arrangement and placing of the desks and seats of the children. School desks are usually made in six sizes, from No. 1, the largest, to No. 6, the smallest. Sometimes they are numbered from A, the largest, to F, the smallest. No. 1 is sometimes known as the College or Normal School size and may be entirely dispensed with. No. 6 is the proper size for kindergarten children of four and five years of age and the smallest first primary children of five and six years of age. A five or six year old child that is above the average size for his age may sit with the greatest comfort in a No. 5 desk. The rural school, then, should contain a single row of No. 2 desks for the largest boys and girls, and a row of No. 6 desks for the smallest ones. If there are five rows of desks in the room there may be one row each, from front to rear, of Nos. 2, 3, 4, 5, and 6. If there are six rows of desks in the room, there may be two rows of No. 4. This selection will come nearer than any other in accommodating the ordinary country school. In too many cases children have desks too large for them. They sit on seats that are so high that they cannot place their feet flatly on the floor, with desks so high that they cannot write on them without elevating their elbows to the height of their shoulders. These conditions are very injurious to health, as well as uncomfortable.

Single desks should be used. The difference in expense is small, while the effect on the order of the school and the independence and studiousness of the children is great.

Only desks of the same size should be placed in the same row. The old fashioned school placed the small desks across the front, the largest ones across the rear, thinking that it looked better that way. Perhaps the desks do, but the children do not. The No. 2 seat is adjusted at a height to fit the No. 2 desk.

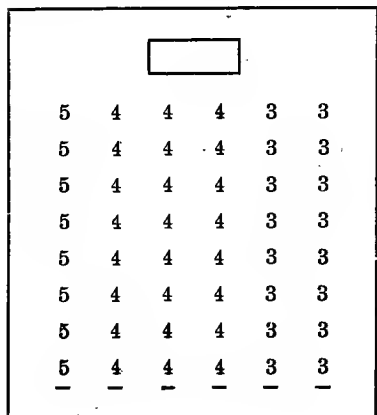
If the main light comes in, as it should, from one side of the schoolroom, the seats should be so placed that it will enter at the left of the children. It is usually better to place the row of No. 6 desks on the left side of the room and the row of No. 2 on the

right side. From a position in front of the No. 6 row of desks the teacher can look over the heads of the smaller children on the left of the room (her right) to the larger ones at the right of the room. It may be preferable, however, to place the rows of No. 5 and No. 6 desks in the center, No. 2 and No. 3 to the outside. The accompanying diagrams illustrate these two plans.



A village employing three or more teachers may seat three-fourths of the pupils in each room with only two sizes of desks. One-eighth of the desks might be the next size larger and one-eighth the next size smaller than the other two sizes used. The intermediate room

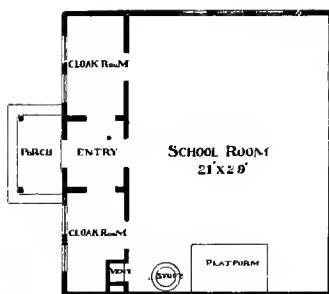
might be seated according to the accompanying diagram:



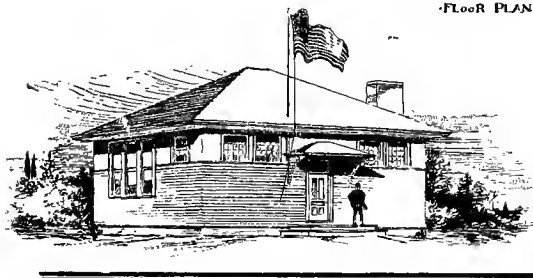
We place the smaller desks and smaller children next the windows, as they form less obstruction to the light in its passage to the right of the room.

Desks Nos. 5 and 6 should be so placed that the edge of the desk next to and in front of the child shall be about nine inches from the back of the seat in which he is sitting; for desk No. 4 this distance should be about ten inches; No.

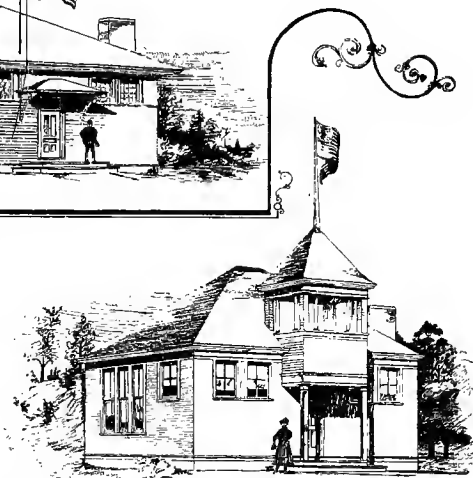
DESIGN FOR A ONE ROOM
COUNTRY SCHOOL



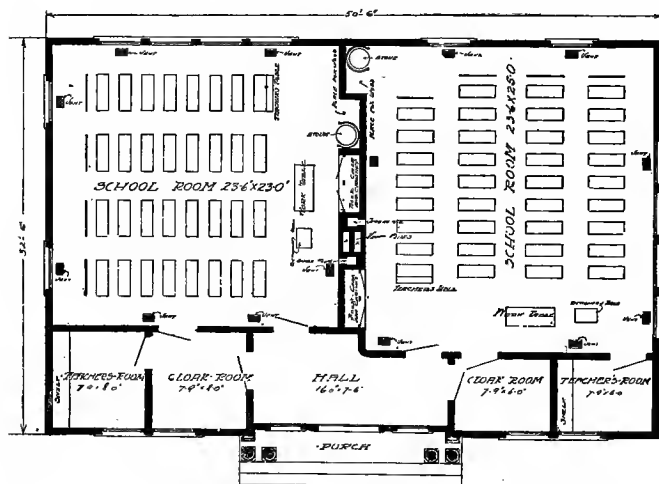
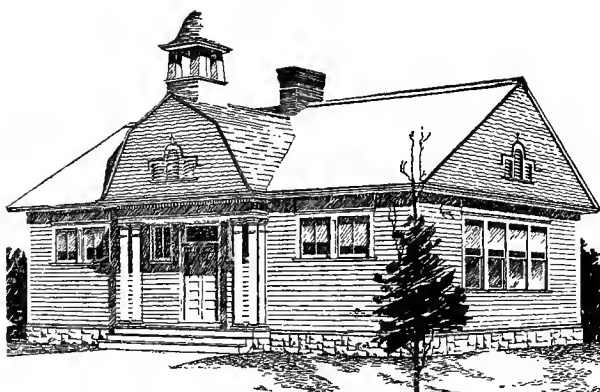
FLOOR PLAN



FRANK E. WETHERELL
ARCHITECT
OSKALOUSA, IOWA



FROM THE WEST VIRGINIA SCHOOL JOURNAL
Charleston, November, 1901



A TWO-ROOM BUILDING

(From the American School Board Journal, Chicago, June, 1901)

3 eleven or twelve inches; and No. 2 twelve or thirteen inches. In a majority of the schoolrooms of Nebraska the desks are so far apart that children are forced to lean forward in unnatural positions to make use of them in writing and drawing.

The aisles at the sides and rear of the room should be about three feet wide and the others should be about twenty inches wide.

Outhouses

Section 6a, subdivision V. of the School Laws of Nebraska for 1901 is as follows:

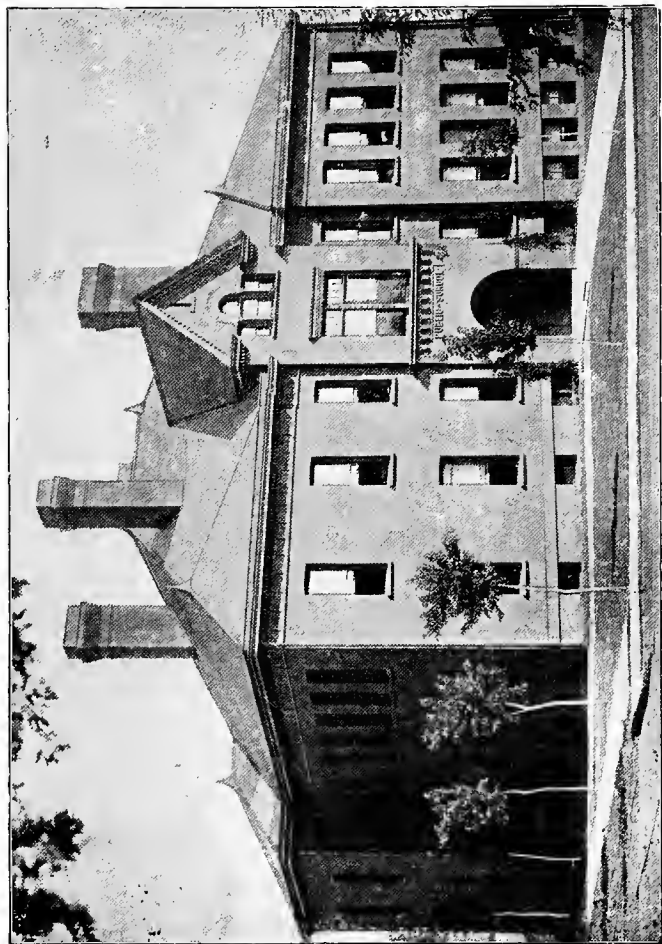
It shall be the duty of school district boards to provide on every schoolhouse site, and keep in good repair and in clean and healthful condition, at least two separate water closets or privies, located on those portions of the site the farthest from the main entrance to the schoolhouse, and as far from each other as the surrounding condition will permit; Provided, That where adequate and separate interior closets are provided and maintained in good repair and healthful condition, the foregoing condition of this act shall not apply.

In too many districts in the state this law is not enforced; in a few districts there is but one outhouse; in a larger number there are two outhouses, but both are under one roof; in a still larger number of districts the outhouses are, next to the schoolhouse itself, the most conspicuous objects within forty rods, and children are taught by their position and arrangement, by suggestion, by school-room habit and inclination, even by their teacher's rules sometimes, that the chief object of school attendance is to frequent the outhouses.

The outhouses at railroad depots, hotels, and school buildings often contain upon their walls the most obscene, foul and vulgar language and figures that may be conceived, written or drawn. This is not always the work of school children, even in the outhouses on school grounds, but often of the vagrant and the loafer. Every school outhouse should be provided with a stout door and lock, and it should be locked at all times when school is not in session. That will insure its daily inspection, and with brush and paint or whitewash all marks should be covered up the day they are made. Discourage such crimes.

The two outhouses should be placed in the two rear corners of the school grounds and should be concealed by trees or shrubbery. A high, tight-board fence or a hedge should separate the rear quarters of the school grounds, and on the front half only should the two sexes be allowed a common play ground.

There are children who have attended the public schools for



LONG SCHOOL, OMAHA
John Latenser, Architect



NORTH SCHOOL, SUPERIOR

several years who have seldom, if ever, asked to be excused from the schoolroom. There are others who leave the room each and every half day. Differently constituted, you say? Yes, undoubtedly, but not by nature. The difference is, in a measure at least, in habit, in training. We know of parents who require their children to attend to their physical necessities before they start to school, in the morning and at noon. Such parents realize that the ordinary school outhouse will, unavoidably, disease the body and corrupt the mind of the child. They realize that the gathering of large numbers of children in such places does not improve their morals or their manners. They realize, also, what is of minor importance, that a child who leaves the schoolroom each half day not only interrupts the work, attracts the attention of the teacher, and distracts the attention of the pupils, both in his exit and his entrance, but also, if he loses ten minutes from his studies each time, loses sixty whole hours, or more than ten days in the course of nine months. A teacher should permit pupils to leave the schoolroom when necessary, and she should be cautioned not to constitute herself the judge of the child's physical necessities, but she should use all reasonable means to reduce the number to a minimum. One teacher has adopted the plan of excusing during the first five minutes after nine o'clock, while settling down and hanging wraps, pupils who think they may need to pass out before recess, and strange as it may seem, this almost entirely cures the evil of a string of pupils constantly going and coming. Pupils will not neglect play to attend to their physical necessities before school time, even with the tap of the bell five minutes before the hour to remind them. And in this connection, is it too much to ask of parents that they instruct their children in habits of cleanliness: the fathers their boys, and the mothers their girls?

School Architecture

The advantages derived from schoolhouses, whose exterior presents a beautiful design, is becoming recognized more and more every year.

When the beautiful was taught unto mankind, says an exchange, the district schoolhouse was evidently left out of the list of things that might be called decorative. Square, grim, uninviting and uncompromisingly ugly, it stands at the most convenient cross roads or on some beautiful wooded slope, a menace to ethics of architectural beauty and a most helpful argument in childish minds against the attractiveness of education. There is little that could appeal to the esthetic side of human nature in a building of this kind.

The log buildings of pioneer days set the rectangular fashion of architecture through necessity, the materials used and the crude labor employed requiring this. Times and conditions have changed so radically since then, the materials and the workmen are so much more easily secured and better suited to the work, that much is now possible in the way of varying the old style. Especially where it is a two- or three-room building are there possibilities of architectural beauty. Straight, apparently endless roof lines can be broken with windows, and sharp angles softened in outline, with a small portico here and there to relieve the severity of the whole. The same amount of money carefully spent could secure so much better results that school commissioners ought to feel inspired to try it sometimes and see for themselves.

From the district school may come the nation's leaders, rulers, writers, thinkers of the future, and the more they are given of the artistic and symmetrical things in childhood the better will they stand in later years for the elevating and refining things of life.

Interiors where bare walls, straight wooden seats and a painful lack of adornment are the daily environment of the country student, offer nothing conducive to the esthetic development, and another helpful opportunity is lost.

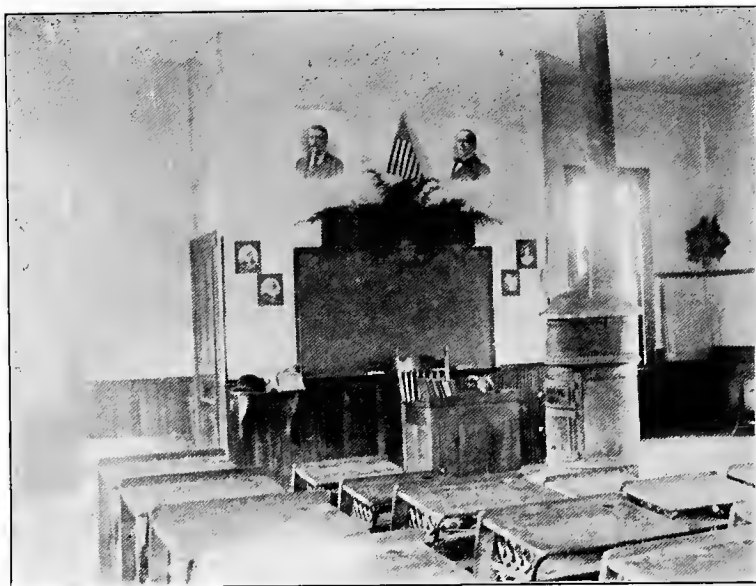
—*The American School Board Journal*, October, 1901.



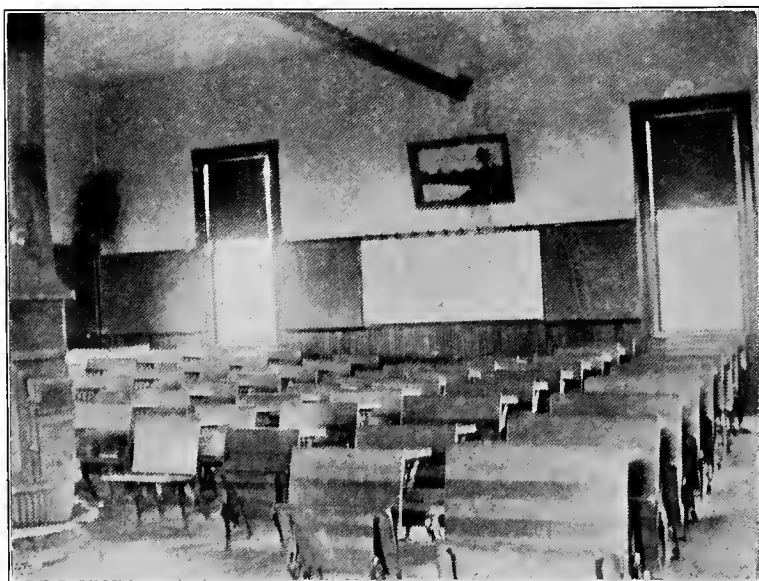
ARLINGTON HIGH SCHOOL ROOM



KECKLEY SCHOOL, DISTRICT No. 63, YORK COUNTY



PLEASANT PRAIRIE SCHOOL, PAWNEE COUNTY



PLEASANT PRAIRIE SCHOOL, DISTRICT No. 14, PAWNEE COUNTY

Value of School Architecture

Economy is well, says a Southern school board member, but sometimes it is carried too far, and sometimes practiced in wrong directions. To the stranger the outward appearance of the school buildings of a city is taken as the indication of its educational standing. Of course the best teachers may teach in the shabbiest buildings, or the poorest in the finest buildings, but as a rule interest in education is indicated by outward appearances. A community that takes great interest in education, that demands up-to-date methods in the schoolroom, will demand up-to-date school buildings, and the absence of such buildings is taken as an indication of lack of progress in education.

Nothing helps a town more than good educational facilities, or hurts it more than a lack of them, and as these facilities are judged by strangers to a great extent by the appearance of school buildings, it follows that nothing helps a town more than good school buildings, or hurts it more than a lack of them.

But it is not for the effect on strangers alone that we need good school buildings. We need them for our children, for their health, for their comfort, for their education. The need of such buildings for the comfort and the health of the children will be conceded without a thought. A moment's reflection will convince any reasonable man that attractive and well arranged school buildings have an educational value.

For men and women are largely made by their surroundings. Beauty is not without its utility. It has a great influence on the young. Children who are in their school lives to have attractive surroundings, other things being equal, will develop into men and women of better taste than those who have not. Life is not all utility, but even in a utilitarian sense taste is valuable. It cultivates a love for order, a fondness for system that has much to do with success.

—*American School Board Journal.*

Rural Schoolhouse Heating and Ventilation

BY S. J. RACE, REDWOOD FALLS, MINN.

The problem of warming and ventilating small schoolhouses in rural districts where a common stove must furnish all the heat that is used is one of no small importance. Common sense here as elsewhere will achieve the highest results.

As a rule the teacher must take care of the fires. He arrives at eight o'clock and finds the fire burning low, or else has gone out, with an average temperature of 45 degrees. By nine o'clock he has managed to raise the temperature to 70 degrees.

It is a barbarous task that some school trustees set forth for female teachers, who are expected to wade through the snow, sometimes a mile, and then go into an icy cold room and there build a fire and await the warming of the room. Many trustees have fires built in mid-winter. It is economy to do so. No teacher is fitted to begin the day's work, if already her strength has been overtaxed by exposure in cold schoolrooms.

There is one thing sure, the doors and windows must fit snug and tight. All exposed windows must be provided with storm sash. The stove must be large enough to do the work easily without crowding. Fully one-half the stoves in use are too small. The fire pot should be at least sixteen inches in diameter and fully twenty inches deep. Nearly all modern stoves are fitted with sufficient check drafts so that a fire is at all times under perfect control. No matter how large the fire pot is, if the heat is not wanted, extra fuel is not consumed.

Hard coal as fuel for schoolrooms is without doubt the best, the most satisfactory, and the cleanest fuel. With it, fire in a good stove can be retained all night, thus giving a warm room in the morning.

There is no reason why the small rural school cannot be provided with an adequate system of warming and ventilation. The physical welfare of pupil and teacher demands it. Health is wealth. The cost should not exceed fifty dollars. This allows for rebuilding the chimney from the foundation. I would recommend a single flue 12 x 16 inches. This will give a chimney with an outside measurement of 16 x 24 inches. We have tried double flue chimneys, with two flues, each 8 x 12 and 12 x 12 inches, respectively. They work



INTERMEDIATE DEPARTMENT, EUSTIS



INTERMEDIATE DEPARTMENT, EUSTIS



PLYMOUTH PUBLIC SCHOOL



GRAMMAR DEPARTMENT, PLYMOUTH

well. But a single flue works somewhat better. The flue is warmer, and hence the outward and upward movement of the foul air is better.

The iron register 12 x 16 inches for opening measurement should go into the chimney within four inches from the floor (don't put any in the chimney near the ceiling). Place the stove in a corner, the one most out of the way. Don't put it in the center of the room. It is in the way then.

Cut a hole in the floor 10 x 14 inches, over which place an iron register. Connect this opening with a box 10 x 10 inches wide and long enough to reach from the register in the floor to the outside of the foundation. Cover the end of the box with a coarse wire screen to keep out any animals. The box may be of wood or galvanized iron. Wood I believe is preferable. Surround the stove with a circular galvanized iron jacket 6 feet high and from 36 to 40 inches in diameter. The stove will determine the diameter of the jacket. Measure the diagonal base of the stove to determine the diameter of the jacket. Have a door 2½ feet by 4 feet cut in the jacket for removing the ashes and feeding the fire. Have the jacket strongly made. See to it that the door in the jacket is properly arranged so that ashes may easily be removed.

I am often asked by school trustees, if the stove were placed in the center of the room, will not the heat be more uniformly distributed? I do not see how it can be. By this plan all the heat in the stove is forced by the flow of pure air from the outside through the fresh air box, directly to within a few feet from the ceiling. The only escape for it is through the foul air register in the chimney near the floor. The escape is by pressure. In a recent test of six school-houses the greatest variation found was three degrees, when measured the same distance from the floor. The thermometer should hang not to exceed forty inches from the floor.

—*The American School Board Journal, Chicago, July, 1901.*

Principles of Ventilating and Heating

(From School Sanitation and Decoration, with permission of the publishers, D. C. Heath & Co., Boston. Extracts from Chapter III.)

Sir Edwin Chadwick did not exaggerate when he said that good ventilation, heating and lighting of a schoolroom will augment the capacity of attention of the pupils by at least one-fifth as compared with that of the children taught in schoolrooms of common construction. In order to ventilate a schoolroom properly, it is necessary to remove quickly the air vitiated by respiration, and to replace it with fresh air. This must be done without producing perceptible draughts. The oxygen obtained from the air is absolutely essential for the continuance of all forms of animal life, school children not excepted.

Expired air contains about four per cent of carbonic acid gas, besides having its volume of oxygen diminished by about the same amount. Furthermore, this expired air has become considerably warmer, and has acquired a large quantity of water vapor from the lungs and air passages. Carbonic acid gas is unsuitable for the support of healthy respiration. It will not support combustion, as is shown by plunging a lighted taper into it. Animal life is almost as suddenly extinguished when placed in an atmosphere of it. Mixtures of this gas, with the common air in different proportions, give rise to various symptoms that indicate incomplete oxidation of the blood, and in some cases cause slow death. However, the carbonic acid gas that occurs in the expired air from man or animals seems to be far different in its effects from the carbonic acid gas derived from purely chemical sources. Carbonic acid gas is in itself odorless, and yet when we enter a crowded and poorly ventilated schoolroom we can always detect a very disagreeable odor. This is caused by volatile, organic matter, which comes off from the body in the process of respiration, and which is the most vicious constituent of expired air. It is invisible and is very difficult to measure or analyze even by the most delicate chemical methods. It is this which we notice when we enter a close room, and, being organic matter, it is subject to putrefaction. While it takes a large quantity of carbonic acid gas to become injurious, a very small quantity of this organic poison may do much harm. It is possible, however, to meas-

OBSERVATORY



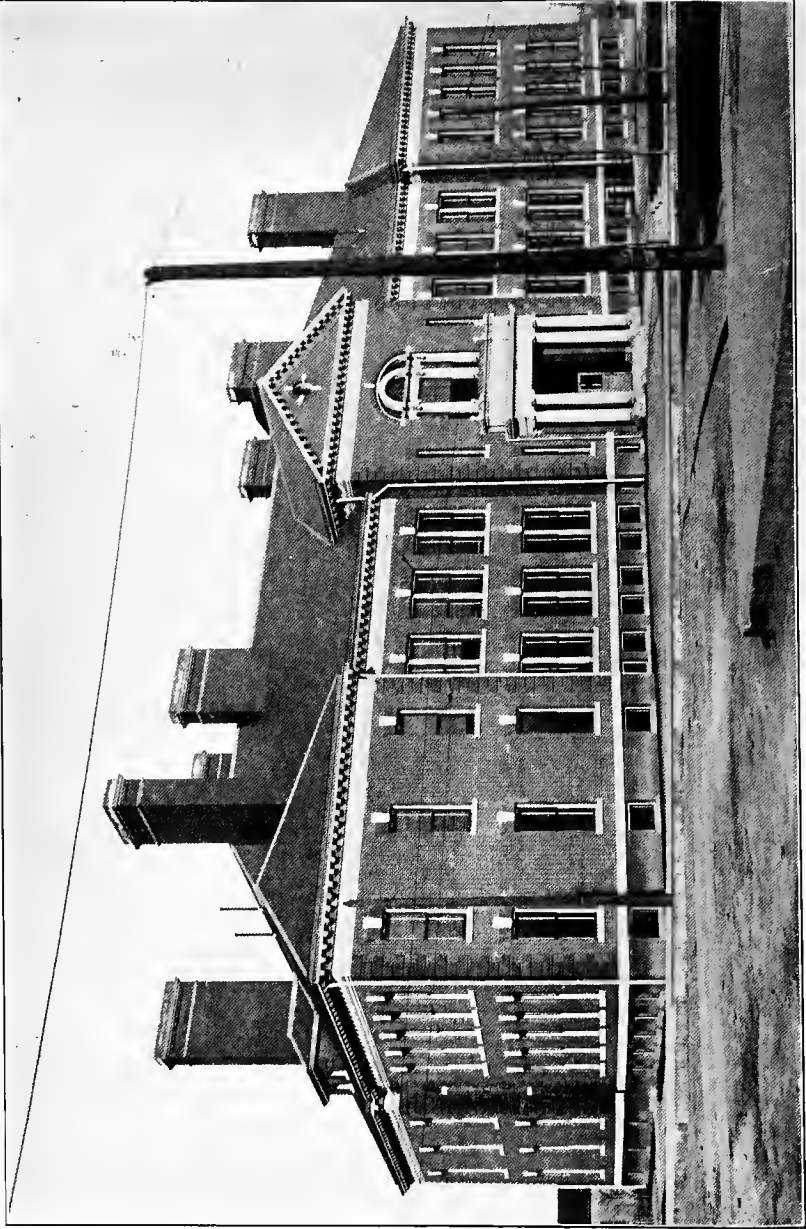
MAIN BUILDING



NEBRASKA
STATE
NORMAL
BUILDINGS



HERNDON BUILDING



CASS SCHOOL, OMAHA — JOHN LATENSER, ARCHITECT

ure the carbonic acid gas quite accurately. And as the organic matter increases in direct proportion with the carbonic acid, we can use the measure of the carbonic acid as the indicator of the amount of poisonous material. In other words, we make our tests for this organic matter by measuring accurately the percentage of carbonic acid. It is an important fact for us to bear in mind that carbonic acid gas, as it comes from combustion or respiration, always appears in bad company. If, for example, it is the result of combustion of coal, it is usually accompanied by sulphurous acid, a poisonous gas; and if it is the result of respiration, it is always accompanied by these minute quantities of volatile, organic poisons.

EFFECTS OF BAD AIR

There are several things about expired air that directly affect the human organism. Expired air has less oxygen, contains considerable carbonic acid gas, together with minute quantities of poisonous organic matter; it has a large amount of watery vapor and is warmer. That these factors have evil effects, especially when they are in a concentrated condition, has been unhappily proved in certain well-known instances. In the Black Hole at Calcutta, 146 persons were confined in a space 18 feet each way, with two small windows on one side. On the next morning 123 were found dead, and the remaining 23 were very ill.

It must not be supposed, however, that no ill results follow a comparatively small degree of pollution, because these results are not immediately apparent. A general lowering of strength and vigor is produced, and a greater proneness to fall victim to respiratory and other diseases. The drowsiness and languor so frequently noticed in school children are, to the intelligent teacher, not an indication of wilful inattention, but of the need of purer air. Yawning, again, is a cry of the nervous system for purer blood, *i. e.*, for blood containing more oxygen and less effete matter.

It is in the highest degree unfair to expect the brains of children to be active in the exercise of their functions while they are provided with blood that is vitiated by respiratory impurities, and are thus kept in a species of mental fog.

TESTS FOR BAD AIR

It is not necessary to go through a careful chemical analysis to ascertain the amount of impurities in schoolroom air. It is accepted among sanitarians that the maximum amount of carbonic acid gas permissible is .07 per cent. This does not mean that the carbonic acid gas is the dangerous thing, but that amount of carbonic acid gas indicates the greatest amount of organic impurity consistent with the preservation of health. There is no simple test for the organic impurities in the air, which are really more important, because more pernicious, than the carbonic acid; but inasmuch as the carbonic acid is nearly always in exact proportion to the organic matter, the test for the former answers equally well for the latter.

This test, combined with the sense of smell on coming directly from the external air, gives most reliable indications, which should never be neglected.

A simple and rapid method for estimating the amount of carbonic acid in the air is described as follows by Dr. J. B. Cohen:

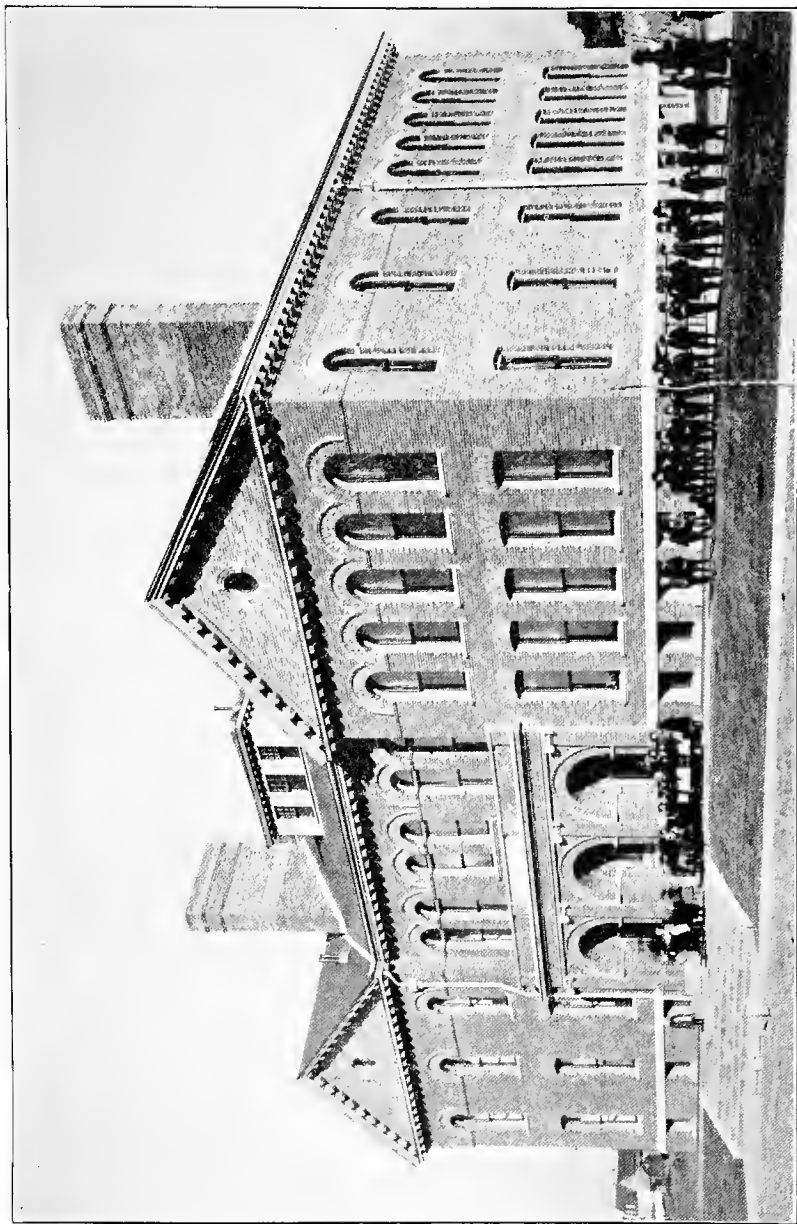
(1) A standard solution of limewater. Pure water is left in contact with slacked lime until saturated. The clear decanted liquid is diluted with 99 times its own volume of distilled water. Make one quart or one liter.

(2) Phenolphthalein solution is made by dissolving one part of phenolphthalein in 500 times its weight of diluted alcohol (equal parts of pure alcohol and water). Make three ounces or 100 cubic centimeters.

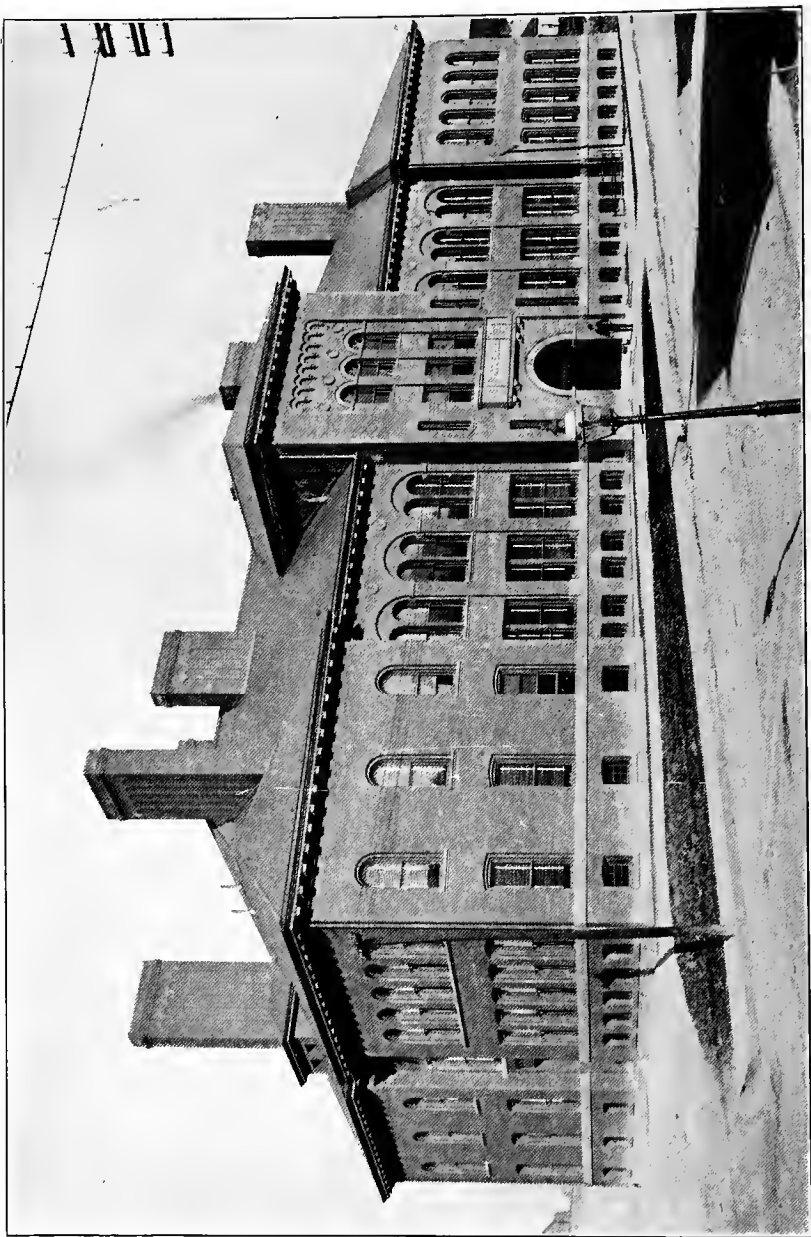
(3) A twenty-ounce stoppered bottle with (preferably) a hollow stopper marked to hold three drams or ten cubic centimeters.

A sample of air is taken by blowing air into the clean stoppered bottle with bellows. Six minims or one-third of a cubic centimeter of the phenolphthalein solution is then added, and the measured volume of lime water is run into the hollow stopper. The limewater is poured into the bottle, the stopper inserted, the time noted, and the contents vigorously shaken. If the red color of the liquid disappears in three minutes or less, the atmosphere is unfit for respiration.

The stock of limewater should be kept in a bottle furnished with a top and coated within with a film of paraffin, and in the neck an open tube should be inserted containing pieces of caustic soda or



SAUNDERS SCHOOL, OMAHA — JOHN LATENSER, ARCHITECT



PACIFIC SCHOOL, OMAHA — JOHN LATENSER, ARCHITECT

quicklime. The phenolphthalein solution is best measured by means of a narrow glass tube passing through the cork of the bottle upon which the measured volume is marked. If the cork fits easily, the liquid may be forced up exactly to the mark by pushing on the cork.

The following are estimates made in this manner compared with the results obtained by Pettenkofer's method:

Time Minutes	Per cent volume of Carbonic Acid
1 $\frac{1}{4}$	0.1618
1 $\frac{3}{8}$	0.1379
1 $\frac{1}{2}$	0.1279
3 $\frac{1}{4}$	0.07716
4 $\frac{1}{4}$	0.05142
5	0.0464
7 $\frac{1}{2}$	0.0351

This method may be used in the classroom at any time, but care should be taken to insure the cleanliness of the bottles and the purity of the standard solution. No bottles that have contained any acid or alkali should ever be used, unless the bottles have been thoroughly cleansed and rinsed.

In taking the sample of air with the bellows, it is well to have a rubber tube five or six feet long attached to the inlet opening on the bellows, thus guarding against vitiation of the air by the experimenter. The school children should not gather about the apparatus, as they might by their breathing interfere with the results. On the other hand, it is well to have them interested in the air tests and as far as possible know what is being done; they should also be told the results.

VENTILATION REQUIREMENTS

It has been seen that for healthy respiration air should never contain more than .07 per cent carbonic acid. Some authorities, however, place this figure at .06 per cent. We will place our standard at the former figure. Ventilation, then, should have for its object the keeping of the amount of carbonic acid gas within this limit.

Each individual gives off in the process of respiration 316 cubic centimeters of carbonic acid gas per minute, so that it requires not less than 590 cubic meters of fresh air per hour to keep each indi-

vidual supplied with air containing less than .07 per cent of carbonic acid gas. Parkes, an authority on hygiene, gives the following figures for the amount of fresh air that should be supplied to persons in health and repose:

For adult males3,500 cu. ft. per head per hour.

For adult females3,000 cu. ft. per head per hour.

For children2,000 cu. ft. per head per hour.

For mixed community3,000 cu. ft. per head per hour.

In actual practice, in the ventilation of schools, 2,000 cubic feet per hour is usually taken as the quantity of air that is practicable to furnish to pupils, and no plan or system of ventilation should aim at giving a smaller supply. No air should be considered too pure for school children. Each pupil should be provided with from 25 to 30 cubic feet of fresh air per minute, and this should be distributed without producing draughts, and have a temperature of not less than 60° nor more than 68° Fahr.

The following rules respecting ventilation are of importance:

(1) The air should be drawn from a pure source.

(2) No draught or current should be perceptible. Often the remedy for a draught is not to close the opening, but to make others in order to increase the area through which the air enters.

(3) The entry of air should be constant, not at intervals.

(4) An abundant exit for impure air should be provided separate from the points of entrance of fresh air. In order to maintain a given standard of purity, it is necessary to provide for the removal of a volume of impure air equal to that of the pure air which is supplied. In order to satisfactorily fulfil all these requirements, it is necessary to understand fully the several systems of ventilation.

NATURAL VENTILATION

There are two natural agencies that are constantly assisting to bring about ventilation: the diffusion of gases, and the air currents formed by differences in temperature.

Diffusion, by which the purer outside gases tend to mix with the impure internal air, is constantly going on, though under ordinary circumstances the rate of diffusion is slow, and the amount of interchange thus effected is but small.

Differences in temperature cause much more active movements of air, warm air floating to the top of cold air, as oil floats to the top of water. The air in a room is warmed by the inmates and by

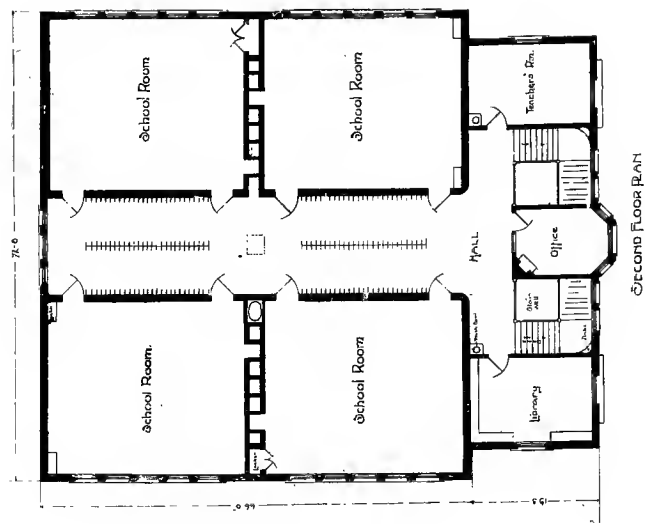
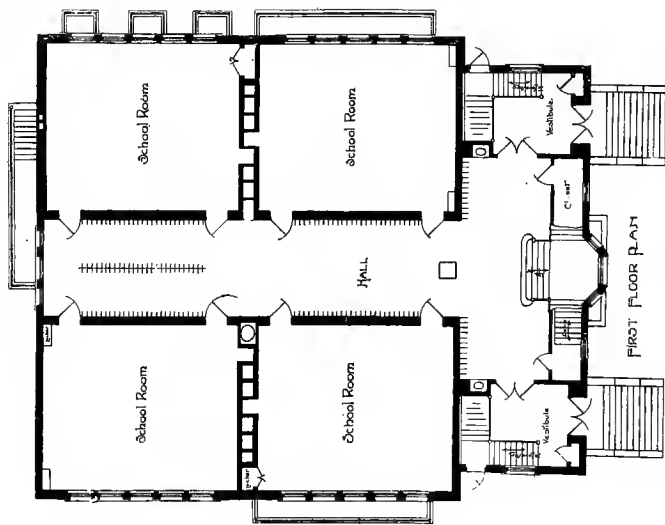


AN INTERIOR VIEW



A PERSPECTIVE VIEW

New Steele School, Colorado Springs, Colorado — From American School Board Journal, Chicago, April, 1901. (See also plans.)



NEW STEELE SCHOOL, COLORADO SPRINGS, COLORADO
 From American School Board Journal, Chicago, April, 1901. (See perspective and interior views).

the stove, gas or other source of artificial heat. Cold air tends to rush in from every opening, and, being heavier than warm air, falls toward the floor, producing a draught. The great problem of ventilation is to secure a sufficient interchange of air without causing draughts. The entrance of air at any temperature below 50° into a room whose temperature is 65° or even 70° is almost certain to be accompanied by a draught; hence it is necessary to warm the entering air during the winter months.

If a free entrance for pure air is not provided, the influence of the higher temperature in the schoolroom may produce an aspiration of air from undesirable places. Thus it not uncommonly happens that air is drawn directly from underground cellars, defective drains, water-closet rooms, and so on.

For practical purposes there are two kinds of ventilation, natural and artificial. The former is produced by the ordinary interchange of air when doors and windows are allowed to remain open. The latter depends upon the assistance of the heating apparatus, or of some mechanical appliance for forcing the air into the rooms or sucking it out from them. Natural ventilation is possible only during the warmer months. The colder the outside air, the more violent the draughts when it is admitted to the warm room. It is unsafe to rely upon it for a supply of pure air when all doors, windows and ventilators are closed. The diffusion of the outside air through the walls, cracks around doors and windows, etc., is not sufficient to purify the air, and, if depended upon, will result in the foul atmosphere only too common in schoolrooms.

In order that natural ventilation may be more effectual, all corridors should be large and airy, and have windows opening direct to the outer air. No schoolroom plan which does not fulfil these conditions can be regarded as satisfactory.

In the methods of ventilation heretofore described, the air is admitted at the same temperature as the external air. Such methods have, however, but a limited application in the northern United States. During a large portion of the year, in order to prevent dangerous draughts, the incoming air requires warming.

When the external air reaches 60° , or better still 65° , the air may be freely admitted. Open windows are by far the best means of ventilation, and during the school recess all the windows should be thrown open, opposite windows if possible, or doors and windows, in order that the rooms may be thoroughly flushed with air. Ord-

nary ventilation commonly leaves a considerable proportion of organic volatile matter from respiration hanging about the room, while the rapid currents of air during the flushing of a room carry this away.

Natural ventilation, as a method of purifying schoolroom air, must be discarded entirely during the winter months.

ARTIFICIAL VENTILATION

Artificial or forced ventilation refers to those methods which employ some artificial means for moving air. Nearly all of such systems depend upon one of two things: (1) the rarifying power of heat applied to air in flues,—the so-called gravity system,—and (2) the mechanical power applied through the medium of fans. In the first method, the gravity system, the problem is to draw the cold bad air out of the rooms, and at the same time draw warm fresh air in. Warm air is lighter than cold and will always rise. Carbonic acid, at the temperature at which it is generated in the lungs, is considerably lighter than air, but as soon as it cools to the ordinary temperature it becomes heavier and of course falls.

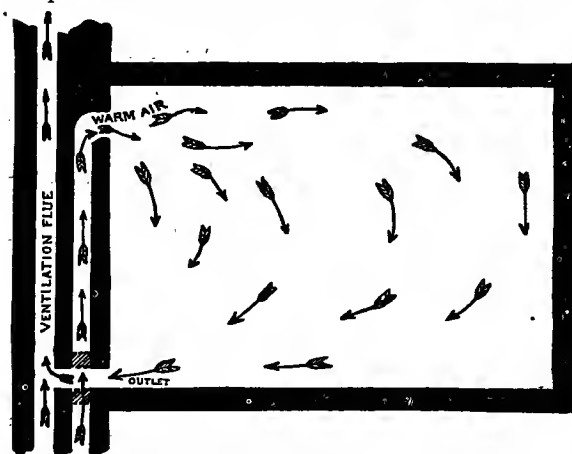


FIG. 3.—Gravity system, with inlet and outlet on the same side of the room

The object of this gravity system is to remove the cold bad air from the bottom of the room, leaving that which is fresh and warm. It is not a very difficult matter to create a strong current by heating air and allowing this heated air to pass up

through a shaft or stack. If this stack is connected with the outlets for the bad air, the foul air will be withdrawn from the rooms by the force of the current, which tends to create a vacuum. The larger the number of outlets through which the air is being drawn out, the less chance there is



BLAIR HIGH SCHOOL, ASSEMBLY ROOM CORNER



SIDNEY PUBLIC SCHOOL



STERLING PUBLIC SCHOOL



COLERIDGE PUBLIC SCHOOL

for the creation of draughts along the floor of the room. Inlets for fresh air must be provided, and proper arrangements made for heating it, so that it will be circulated through all parts of the room at the proper temperature. It is readily seen that this fresh air does not have to be forced into the room through the inlets because the ventilating shaft tends to produce a vacuum in the room, and the fresh warm air will be sucked in to fill the vacuum. The action of the air currents in such a system is well shown in Fig. 3.

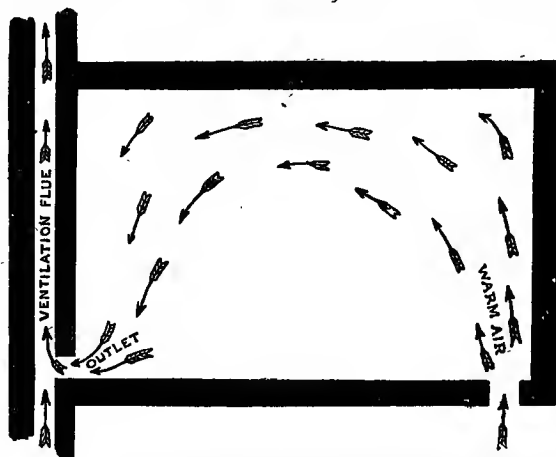


FIG. 4.— Gravity system, with inlet and outlet on opposite sides and near the floor

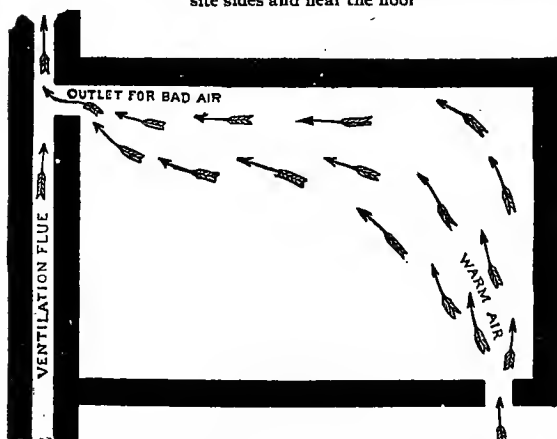


FIG. 5.— Gravity system, with inlet near the floor and outlet near the ceiling on the opposite side

The warm air, if allowed to enter high in the wall of the room, makes a complete circuit of the room without creating much draught, and is sucked out through the outlet by means of the sucking action caused by the current of air in the ventilating shaft. While these currents may be slightly affected by natural ventilation through doors and windows, the variation will not interfere materially with the proper results being attained. The diagram provides, as can readily be seen,

for both inlet and outlet on the same side of the room. Other

locations for these openings have been advocated; for instance the warm air inlet may be in the floor, and the vent on the opposite side of the room and near the floor. The result of such an arrangement is shown in Fig. 4. In this case the distribution of the warm air is not complete.

Still another arrangement is to have the warm air inlet on the floor

at one side of the room, and the outlet high up on the other side. This gives still less distribution of the warm fresh air throughout the room, as is shown in Fig. 5.

Methods have been tried introducing the warm air rather high up in the room, and withdrawing it from the opposite side near the floor. Figure 6 shows that the results are similar to the last arrangement. These last cases are bad enough, but there are others even worse.

Figure 7 shows the inlet high and

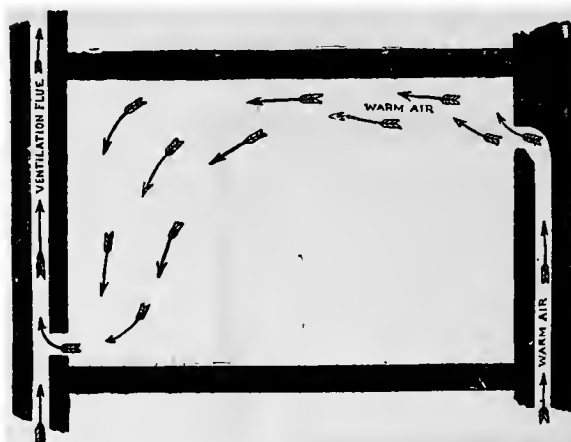


FIG. 6.—Gravity system, with inlet high and outlet near the floor on the opposite side

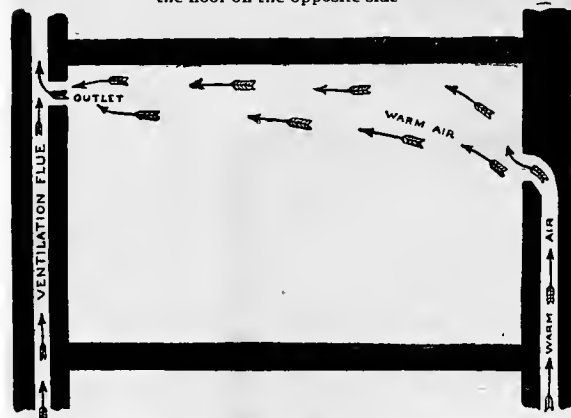


FIG. 7.—Gravity system, with inlet high and outlet high and opposite

the outlet nearly opposite. Where this plan is adopted, any escape of the vitiated cool air must be brought about through the natural ventilation of doors and windows, or by disturbance of the lower atmospheric stratum



CEDAR BLUFFS PUBLIC SCHOOL



JANSEN PUBLIC SCHOOL



MERNA PUBLIC SCHOOL



ANSELMO PUBLIC SCHOOL,

by the occupants of the room. Careful experiments have been tried in glass rooms by ventilation experts, who have watched the course taken by the air currents under these different conditions, the currents being marked by smoke and thus easily studied.

In practice, it is found advisable to have several outlets for the air rather than one, as indicated in the diagrams. Thus there is less chance for the production of draughts, and a better circulation is afforded. These gravity systems usually arrange for a mixing valve, by means of which the temperature of the fresh air is regulated, it being possible by opening or closing the valve to introduce more or less cold air directly from the outside as occasion demands. Automatic regulators (thermostats) have been devised and installed to open and close these valves, without requiring the attention of the teacher. In many instances these work admirably, but often get out of adjustment, in which case there is no ventilation, and either too little or too much heat.

It is of the greatest importance in the introduction of this or any other recognized system of heating and ventilating that an expert engineer of wide experience should make the plans and complete the arrangements. Each school building requires a special study by itself. Two buildings constructed on exactly the same architectural plans might require entirely different heating and ventilating systems, because of slightly different orientation or exposure. It has been the tendency in the past to economize on systems of ventilation; but when the necessary expensiveness of good ventilation is fairly grasped by school managers, there will be an end of this attempt to save money, which is now so general. Such economizing is at the expense of the children's health and greatly tends to increase our mortality.

The other method of artificial ventilation, that requiring mechanical means to force fresh air into the rooms, operates in exactly the opposite way from the gravity system. That is, the fresh air is forced into the schoolroom by means of a fan, and the foul air is pushed out through any openings in the rooms and passes away through a stack. The air in the rooms in such a system as this is under constant pressure. All spaces are filled with air, and all leakage is toward the outside. Thus the entrance of contaminated air from any outside source is absolutely prevented. Such a system as this, in distinction from the vacuum system, is called the plenum.

The diagrams shown in the discussion of the gravity system will answer as well for the fan system, if we imagine the warm air to be *forced* into the room, and the vitiated air to be *pushed* out through the vents.

The plenum has one great advantage over the vacuum system, in that the air in the rooms is under pressure, and there is no opportunity for bad air to leak into the rooms through floors or walls. Of course the air that is warmed and distributed must be taken from a pure source, and this leads to the discussion of an important point. This is the air supply.

The air must never be taken from the basement. It must be taken in from the outside; and the condition of the ground over which it is drawn is of great importance. The best conditions are afforded by a grass plot that can always be kept mown and clean. If necessary, it should be fenced off, and all scraps from lunches, loose papers, apple cores, banana skins, etc., must be kept from it. It should be the cleanest and most beautiful spot about the school, and should be as far as possible from the part of the building in which the sanitaries are located. In this way, a pure, fresh supply is assured, and one that is comparatively free from dust. In warming the air, it is often advisable to furnish it with some moisture. This should all be arranged in connection with the heater. A room that is overheated with dry air is very oppressive.

These systems, such as the gravity and the mechanical systems, require the expenditure of considerable coal or gas in order to heat the air and to run the necessary machinery. No system of warming and ventilating has as yet been devised which will work automatically. Any system, if it is good for anything, must be supervised by a competent man. Brains are required as well as coal for an apparatus designed for this great purpose. The man who is responsible for the running of the heating and ventilating apparatus not uncommonly regards good ventilation as inimical to his interests, and in case the heat is lowered, will sometimes stop the valve leading to the exit flues, thus penning up the hot impure air, rather than supply the extra fuel required. Of course it is for his interest to appear economical of coal. He is, therefore, under constant temptation to check the outflow of warm air from the rooms and to minimize the period of flushing them with the external air after school hours.



WEST UNION, CUSTER COUNTY, PUBLIC SCHOOL



DISTRICT SCHOOL No. 47, HAMILTON COUNTY



DISTRICT SCHOOL, No. 13, HALL COUNTY



DISTRICT SCHOOL, No. 74, HALL COUNTY

Various other methods of heating schoolrooms are in common use. One that deserves some attention is that which utilizes steam for heating, the radiators being placed in schoolrooms next to the outside walls. Openings are cut through the walls at the base of these radiators, permitting the outside air to enter the room and become heated by passing between and around the various pipes of the radiator. The outlets for bad air are usually placed on the other side of the room from the radiators, thus securing a fairly good circulation of the air throughout the room.

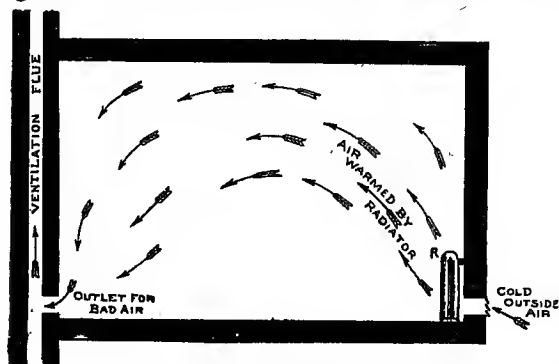


FIG. 8.—Steam with direct radiation

The action of such a system on the air currents in the room may be seen in Fig. 8.

Steam-heating, if the radiators are in the schoolrooms, is not advisable unless there are openings provided for admitting fresh

air. The temperature is regulated with great difficulty, even if the valves are in good condition. The average steam-heated schoolroom is overheated.

In smaller schools it has not been customary to introduce any of these more or less complicated systems because of the expense, and yet none of the other methods that have been devised for them are perfectly satisfactory. The unjacketed stove, when placed in the schoolroom itself, cannot be considered with favor. It is true that several forms of stove have been arranged with jackets, double floors, ventilating shafts, etc., but even then, unless conditions are remarkably in their favor, such heating and ventilating apparatus will not work with satisfaction. In cold weather, in particular, such stoves will not heat the room equally. Some children will be warm and some cold. Stoves without any system of jacketing should never be used. They make the air very dry, produce a close smell, and heat the room only on the side where the stove happens to be.

The distribution of the warm air in this case may be seen in Fig.

9. If this stove is jacketed, and proper means taken to heat and distribute outside air and to remove bad air, much objection is removed. It will be found, however, upon taking into account the expense of jacketing the stove, providing the necessary ventilation flues, etc., required to make it work satisfactorily, that the expenditure incurred will not be very far from that required for the construction of a cellar and furnace, and the latter system would give far greater satisfaction. One serious objection to having the heating apparatus in the schoolroom is that any attention which it may require during school hours is a cause of distraction to the children.

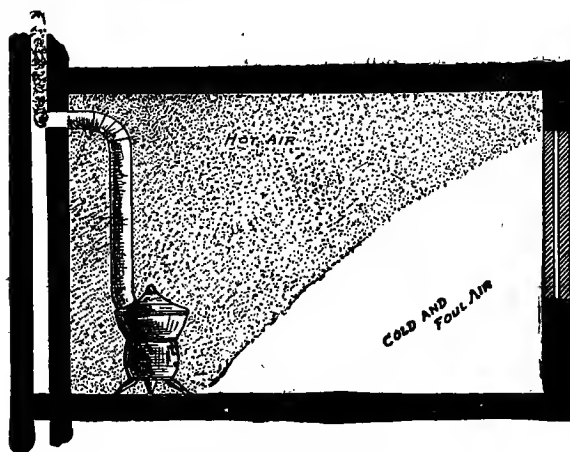


FIG. 9.— The unjacketed stove

Fireplaces are considered very good things to have in schoolrooms, but they must not be depended upon as the only means of heating and ventilating. A fireplace furnishes a cheerful warmth and is a great purifier of the air, but its heat is too unequally distributed. Even in smaller rooms it produces cold currents of air along the floor. Attempts have been made to utilize the heat usually passing up the chimney and wasted by the fireplace, by means of chambers behind the fireplace. In this way external air is warmed as it enters the room. A heater constructed on this plan is shown in Fig. 10. At the back of the heater is an air chamber communicating with the external air.

Air admitted through the opening (*a*, Fig. 10) is warmed by coming in contact with the fire-clay (*d*), which separates the air channel from the smoke flue (*c*). The warmed air leaves the air channel by the grating (*b*) over the fireplace, and then travels along the upper



GENEVA WARD SCHOOL



GENEVA PRIMARY ROOM



DISTRICT SCHOOL No. 7, PERKINS COUNTY



DISTRICT SCHOOL No. 61, RED WILLOW COUNTY

part of the room, falling to the floor as it cools, and finally escaping up the chimney.

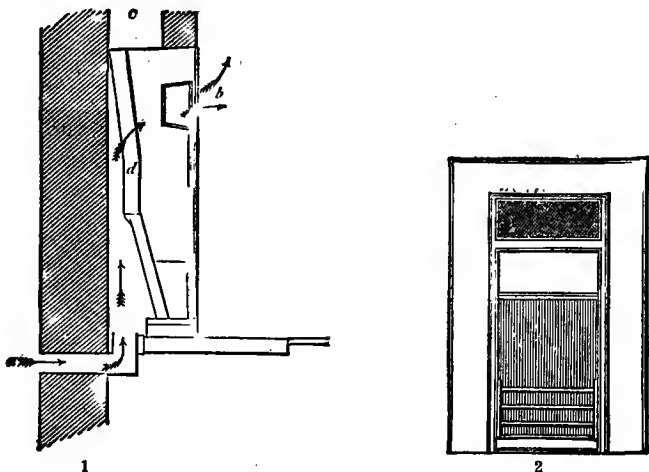


FIG. 10.—Slow-combustion ventilating stove

1. Section of stove showing—*a*, entrance of cold air; *b*, entrance of warmed air into room; *c*, smoke flue; *d*, fire-clay back of stove.
2. Front elevation of same stove.

The distribution of air currents in a room with this arrangement would be similar to that shown in Fig. 3. A specially arranged fireplace of the kind just described might be found very useful in a very small room, but in the larger rooms it could hardly be satisfactory by itself.

The Model Schoolhouse and Grounds

Before entering upon our work, let us take a look at the schoolhouse. Every country school should have at least four acres surrounding the building. The same amount of space would be a great advantage in the city, but is hardly practicable yet. There are, however, a great many improvements that might be introduced into the city schools without entailing any great additional expense. For instance, the school buildings might be smaller and more numerous. No schoolhouse should be more than two stories high. It is a poor plan to build one large school of five or six stories where two buildings of half the size would answer the purpose better. It is cruelty to the children to have them file in line up three or four flights of stairs four times a day, and at recess be so crowded together in the playground that exercise and play of an exhilarating nature are out of the question.

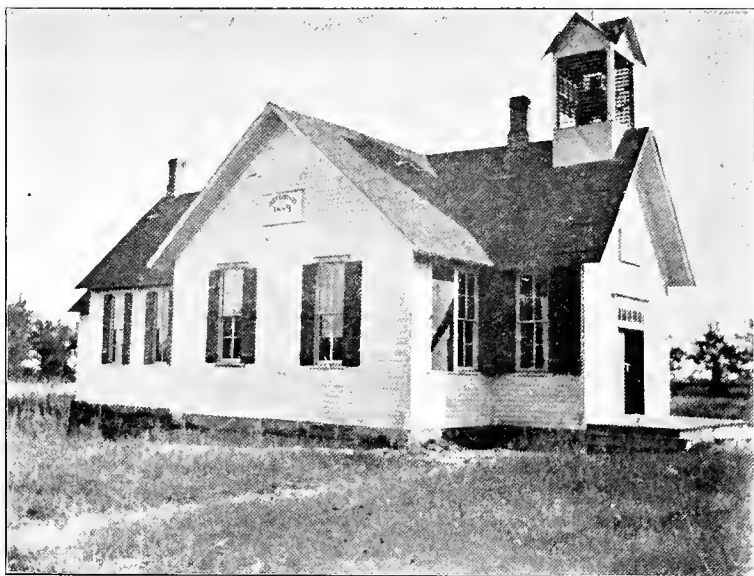
The roughness and rudeness that prevail upon the playgrounds of many large public schools is almost entirely due to the poor accommodations for the number of pupils enrolled. It would be far wiser and the results would be more satisfactory if each school building were limited to three hundred pupils. This would allow for a building of ten rooms, five rooms on a floor. The grounds surrounding the building should be spacious. This matter should be brought properly and persistently before the Board of Finance of every city.

In most of the public school buildings of the cities there is a large basement built for the accommodation of the students in wet weather. The buildings range in height from three to five or six stories, accommodating from eight hundred to two thousand pupils. Now, of course it is not necessary to point out that the higher the building the more pupils it may register and the narrower in proportion is the basement accommodation which must be used in wet weather; for the students are not allowed to remain in the classroom during recess. Think of it for a moment—two thousand pupils crowded together into a close basement on a damp, foul day! Do you imagine they derive much benefit from the “recreation hour”?

All intelligent men and women will agree that the crowded con-



DISTRICT SCHOOL No. 14, HAMILTON COUNTY



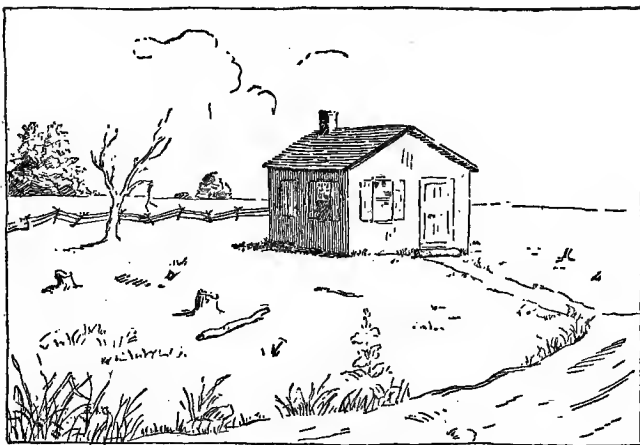
DISTRICT SCHOOL No. 33, LINCOLN COUNTY



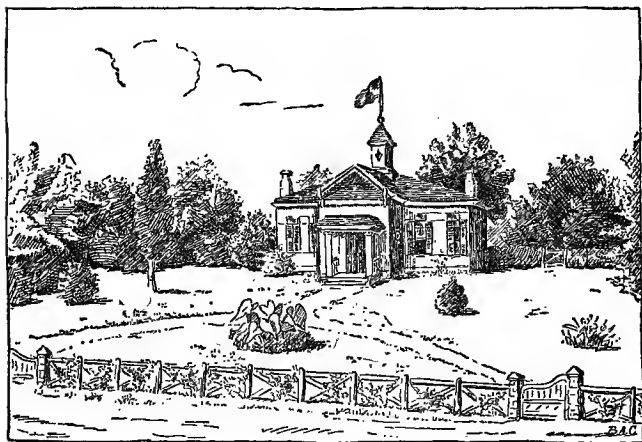
ABIE PUBLIC SCHOOL



TAYLOR PUBLIC SCHOOL



THE COUNTRY SCHOOLHOUSE AS IT IS



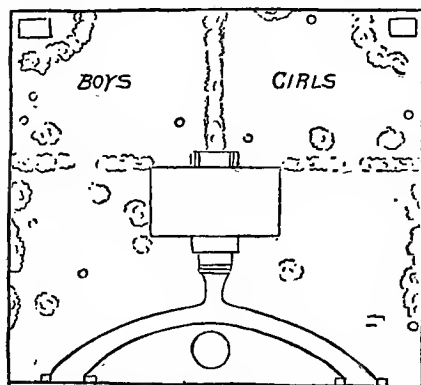
THE MODEL SCHOOLHOUSE AND GROUNDS

dition and fearful lack of sanitary measures in many of our schools is nothing less than criminal. If we are going to build bodies and brains for useful men and women, the conditions *must* be favorable, and viewed even from the standpoint of political economy, hygiene and physical culture in the school are absolutely indispensable. Unless the most careful attention is given to these details, the herding

together of the children causes a weakening of the moral forces, spreads disease, and sends out, poorly equipped for fighting the battles of life, the children who are to represent us in the years to come. Blessed is that community which has on its school board large-hearted men of broad and liberal culture. At least one of these should be a live, progressive physician who loves his profession and his fellowmen.

THE HOPE OF OUR COUNTRY

The country schools have great advantages in many respects. They are rarely more than one story high—a tremendous advantage. They are usually of ample size. The heat is supplied by wood stoves or grates, and in damp weather the children are allowed to remain in the class room instead of being turned into a dark basement with hundreds of other little pupils. The hope of this country rests largely with the country schools, where the educational advantages may not be so good, but where the physical advantages are far greater.



Plan of Model Schoolhouse and Grounds

But why not provide such places as the pupils will love to gather in? A pretty little school building, with grounds neatly laid off and a few shrubs and flowers to add attractiveness, will often arouse and inspire pupils as nothing else will. We present a view of the average country school and also a view and ground-plan of such a school as we would recommend to wide-awake and progressive

school boards. It does not cost one bit more to build a model schoolhouse than to build a poor one. The children themselves would gladly plant flowers and trees, and keep the grounds in proper condition.

The heating arrangements and the poor sanitary arrangements of the city schools are multiplying tuberculosis and many other diseases, and gradually undermining the health of the little pupils who attend them. Very few homes are kept at the high temperature of



SCRIBNER PUBLIC SCHOOL



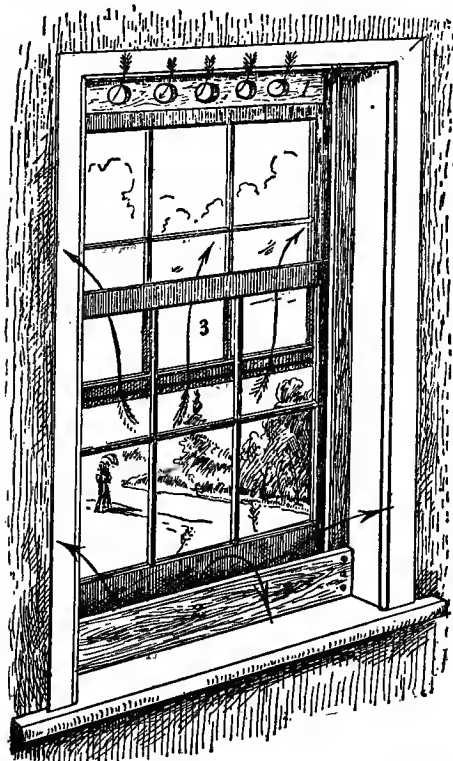
BURWELL PUBLIC SCHOOL

the city schoolroom, and even before the children get to their homes, after being cooped up for hours in an overheated and ill-ventilated atmosphere, they have become chilled to the bone, and the foundation is laid for diseases that will wreck the strongest constitution. It is this sudden transition from extreme heat to extreme cold that causes many a little one to draw in his chest and round his shoulders

in the effort to "hug" himself away from the cold.

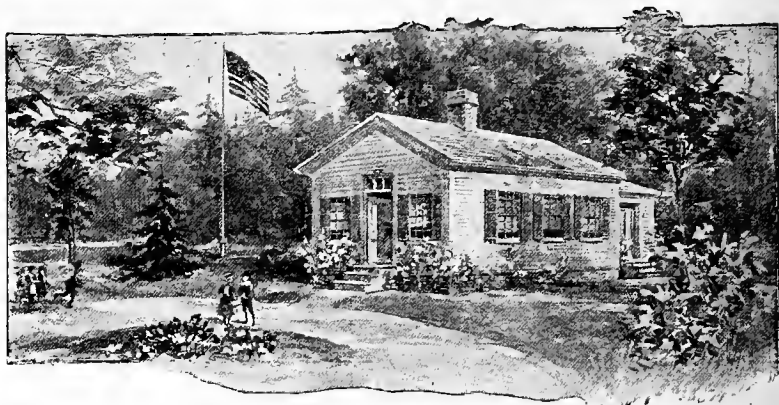
Now, it may not be possible to change the conditions which prevail as to the size and shape of the school building and the manner of its heating, but can we not do something toward ventilating the rooms? How about opening the windows while the pupils are at the board, when they are out at recess, and at various other times during the day? A little attention on the part of the teacher will do much to help matters in this direction.

In most of the country schools window ventilation is usually the kind that has been provided. For such schools we present a picture which will give a good



1. Escape holes in movable board for exit of foul air.
2. Board to break the force of draft of fresh air.
3. Entrance of fresh air.

plan for ventilating. If possible the window should be run to the ceiling, thus allowing foul air to escape. Or a transom should be built between the window and the ceiling and open inward from the top.—*Johnson's Physical Culture.*



The Country Schoolhouse and its Grounds: An Aid to Agricultural Training

BY THE HON. JAMES WILSON, SECRETARY OF AGRICULTURE

[Reprinted from *The Youth's Companion*, March 14, 1901.]

Sometimes the country schoolhouse has extensive and well-kept grounds, but oftener it is in a pasture, a cultivated field or a wood-lot. In these instances, although the playgrounds are usually adequate, the opportunities for object-lessons in natural history and in various profitable but incidental lines of study may not be recognized.

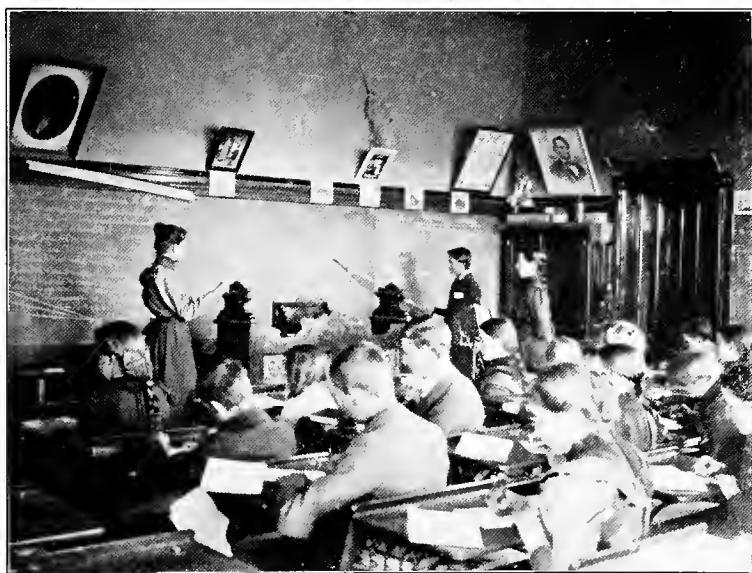
The young farmer cannot be introduced to nature too soon, and should never be long separated from her object-lessons. Suitable text-books designed to lead him by easy stages are still few and not well arranged.

We live in an age of specialized work, and men of education must usually, if they would become impressive, confine their inquiries to one channel. The farmer deals with soils, plants and animals, with heat and cold—in short, with nature in her varied forms and manifestations. It would seem wise, in the interest of the commonwealth and of himself, that he should be made thoroughly acquainted with soils and their composition, with the life of plants and animals, and with the various species that may be expected to flourish in particular localities and climates.

Yet although the farm keeps the balance of trade in the nation's



HIGH SCHOOL RECITATION ROOM, SCRIBNER



HIGH SCHOOL DEPARTMENT, SCRIBNER



INTERMEDIATE DEPARTMENT, SCRIBNER



GRAMMAR DEPARTMENT, SCRIBNER

favor, furnishes two-thirds of our exports, contributes to our manufacturing supremacy by providing cheap food for our mechanics, comparatively little has been done toward educating the farmer for his work. To be sure, the United States has done more for him than any other country. In 1862, Congress endowed agricultural colleges to teach the sciences relating to agriculture. In 1867, experiment stations were provided for, where research might be made into the operations of nature.

But considering that Americans pay more money for public education than any other people on earth, a comparatively small proportion of the sum is devoted to stimulating and aiding that half of our population who cultivate the soil. The tendency of primary education has been to lead the country youth away from the farm instead of helping him in the study of those sciences relating to production. It would be politic and patriotic to incorporate into the farm youth's education some knowledge that shall bear more directly upon his future life and work.

And first, the grounds around the schoolhouse could be made to speak out in a language easily intelligible to the youth whose eyes have been familiar with nature from the days of the cradle.

Flowers should abound in the schoolhouse grounds. They are among the best of educators, for they develop taste and a love for the beautiful, and make men sensitive to the attractive and lovely, in town or country, in field or forest.

Moreover, the flower of the plant has an economic use, concerning which the scholar should be informed. Nature designed it to invite the wayfaring insect, and we can employ it to delight the child in its first journey away from home. Little people, in fair weather, should not sit long at a time on benches in school. The lawn should be arranged for their pleasure, and in any such arrangement flowers cannot be omitted. Although their language will not be immediately understood, the child will, by gradual acquaintance, learn to know and love them. The country boy is usually bashful, and has little to say to new acquaintances; the flowers would get into his confidence sooner than most strangers. He would not miss home and mother and familiar things so much.

Instructive lessons about annuals, biennials and perennials could be taught as the years go by. The names of the plants and of their several parts would be memorized much more readily from the living

subject than from a book. At recesses and during the noon hour much of the plant-lore given to the more advanced students would be dealt out by them to the beginners. Young people do not hide things under a bushel. The study of nature's book is never regarded as a task, and what she tells us in her own peculiar way finds almost always an open mind and a retentive memory.

In the very best rural schools are found herbariums, fishes preserved in alcohol, samples of rocks, soils, woods and minerals. There are few districts in any of our states that cannot afford these collections, and there is no good reason why the country teacher should not use the out-of-door object-lessons that are so abundant, so inviting, and altogether so appropriate for the best development of the young farmer.

Heat and moisture are good servants of the cultivator when controlled, but severe masters where, through ignorance, they are permitted to have their own way. Their potent influence on production is generally overlooked in the education of the farmer. The subject is certainly neglected entirely in most of our country schools, important though it may be to the future welfare of the child.

Advanced research to discover the effects of heat and moisture on production is receiving some attention at our agricultural colleges, and valuable results are available to the students who reach the colleges; but these are comparatively few in number. The state college endowed by Congress offers to the farmer a kind of intermediate stage of education, but he is given no practical beginning in the common school, and there is no university in which, after graduating from college, he might carry on specialization.

Many of us have distinct recollections of disagreeable schoolhouses and grounds. We ought to arrange matters so that different impressions will be made on the little people who now venture from home and go to school. We should associate as many attractive things around the schoolhouse as can be brought together, just as we make the parlor the most beautiful room at home in order that our friends may be pleased while they visit us.

Flowers and plants are most pleasing additions to the house as well as to the lawn. Students should be taught the daily care necessary to have healthy and beautiful flowering plants, the uses of the spray, and the remedies for infesting or destructive insects.

The children of a schoolroom will watch with interest the unfold-



LONGFELLOW SCHOOL, KEARNEY



ALCOTT SCHOOL, KEARNEY,

ing of new leaves, the first appearance of a bud, and finally the bursting petals of a beautiful blossom. Without much extra labor the paths that should be artistically laid out on each schoolhouse lawn can be edged with neat, blooming border plants. The pupils would always delight in caring for and protecting them.

Flower-beds on the lawn are pretty if properly made. A few hyacinth bulbs planted in the fall make almost as early reminders of spring as the hepatica or the ambitious crocus that laughs at a snow-bank. The hyacinth bulb is interesting from the moment it peeps through the ground, and its flowers are satisfactory, too, because they last longer than those of most other early bloomers.

The gathering of seeds from all trees, shrubs and plants should be encouraged. If all the seeds be saved, pupils whose parents have not encouraged flower culture may be induced to make little flower-gardens at home, and incidentally to take pride in the appearance of the yard.

Small trees and shrubs look well set out as a hedge, besides furnishing a shade on one side of the lawn. Each girl might have a flowering shrub planted for her, the variety to be of her own selection, and it should then become her special care.

Several things might be done to make the schoolhouse yard interesting to the students. Upon the advent of each new pupil a tree, native to the latitude, might be planted. This would give a certain dignity to each new pupil.

Much sentiment has attached to trees in all lands and in all ages. Acorns from the oaks of Mount Vernon were presented to the Tsar of Russia by a brother of the late Senator Sumner. They were planted, by order of the emperor, in the imperial preserves of St. Petersburg, and there grew into fine trees, the acorns from which were, in their turn, brought back to the United States by Mr. Hitchcock, then ambassador to Russia, and now Secretary of the Interior. These acorns will be planted at Mount Vernon, near their "grand-parents."

After a recent visit to England, Senator Hoar of Massachusetts brought back young British oaks from the royal forest of Dean and chestnuts from the estates of the Earl of Ducie. These will be studied by our foresters as they grow in the mall at Washington. Within the enclosure of the Botanical Gardens at Washington many trees, planted by prominent American statesmen, have grown to be objects of great interest and beauty.

Charles Sumner planted a European hornbeam; Thaddens Stevens an oriental plane-tree; Senator Beck an American elm; President Hayes a rare variety of oak; Senator Hoar a cedar of Lebanon. A Scotch plane-tree planted by Senator Frye is pointed out to all visitors. There are many others, but enough have been mentioned to show the interest that attaches to a tree carrying the name of the person by whom it was planted.

Young people attending the country school would soon learn the names of all the trees indigenous to the neighborhood. If the pupils would gather the seeds of the trees at different seasons when they are ripe, the teacher would have an object-lesson to assist her in conducting nature studies. Methods of preserving these seeds through the winter and the habits of growth of the different varieties would be studied with intense interest and never forgotten. As the pupils visited new neighborhoods and new countries, their early forestry lessons would be valuable in enabling them to add to their knowledge of silviculture.

The great life-work of Senator Morrill of Vermont, assisted by other far-seeing American statesmen, was the endowment of institutions in each state in the Union, where the sons and daughters of American farmers could study the sciences that relate to agriculture and domestic economy. A great question, however, is the proper preparation of young country people for entering these agricultural colleges. The preparation must be given by the country school teacher, and the query presents itself, "How shall the teacher be fitted for this work?"

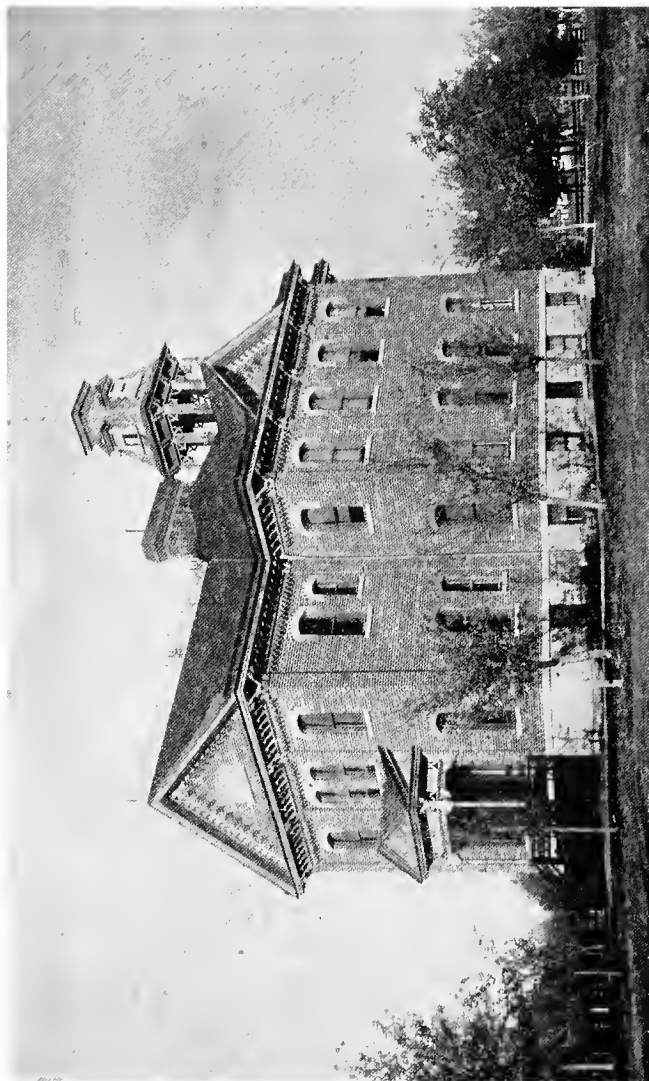
In most of our states we have normal schools for teachers, yet some of our state agricultural colleges have not succeeded simply because the instructors had been educated in institutions that gave them too little of the sciences relating to agriculture.

Progress is being made; the student of soils, plants and animals is finding his place in the classroom; but the giving of direction and bent toward the agricultural college must begin with the farmers' children in the country schoolhouse, and to this end we should have object-lessons on the schoolhouse grounds.

The dry ranges of the great West are being rapidly destroyed by injudicious grazing. The beautiful valleys of the mountain states are being rendered barren by the unwise application of water. The great wheat-fields from the Missouri river to the Pacific ocean are



WHITTIER SCHOOL, KEARNEY



KENWOOD SCHOOL, KEARNEY

losing their fertility, and the grains are losing their nitrogenous content by continual robbery of the soil. Summer fallowing and the sowing of one crop in two years are becoming universal.

The young farmer attending the district school could readily be taught what a plant gets from the soil and what it gets from the air. The several grasses could be planted, and their office in filling the soil with humus, enabling the soil to retain moisture, could be explained. The legumes—peas, beans, clover and alfalfa—could be grown in the schoolhouse yard, and during recess or at the noon hour the teacher could interest the students by digging up a young pea or clover root and showing the nodules, whose office it is to bring the free nitrogen from the atmosphere and fix it in the soil.

The pupils would see that some relation exists between the size of the nodule and the fruit of the legume. As a plant grows older and blossoms and seeds begin to form, the matter found in the nodules rises in the plant to help make seeds, leaving the nodules like old egg-shells from which the birds have been hatched.

The microscope could be brought into use in the study of the soil, and microscopic plants could be studied, special attention being paid to those that change fertilizer into plant-food.

Entomological studies might very well be carried on around the country schoolhouse. The wild bee goes from flower to flower of the clover plant seeking pollen with which to build her cells or honey to store in them. She performs a very useful labor for the farmer by carrying pollen from flower to flower.

The people around Charleston who raise early cucumbers in green-houses for the early markets find it necessary to use the brush in distributing pollen, but they take care to have a swarm of bees to do the work as soon as the weather is warm enough.

Tens of thousands of Smyrna fig-trees that should produce the most valuable fig of commerce, brought from the Turkish empire and planted on the Pacific coast, have never ripened fruit except when artificial pollination was practised. An entomologist, visiting the trees, told the owners that what was needed was a little wasp that lives on a wild fig in the neighborhood of Smyrna. After repeated efforts, that little fly has been brought from its Asiatic home, and is now domiciled in the fig orchards, ready to help the people of that neighborhood to begin a new industry.

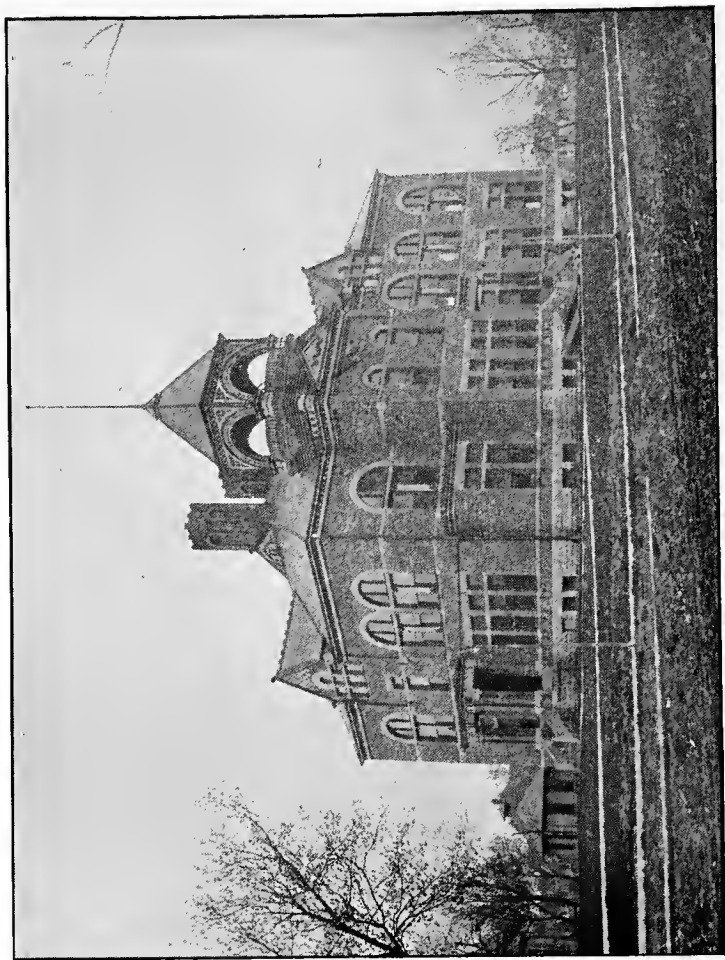
The attention of the young farmer at the country schoolhouse

could be gradually drawn, by easy stages, from one insect to another. A little help by the teacher would arouse in the student intelligent interest in our insect friends and enemies.

Children should be encouraged to bring specimens to school, collections could be made, and the student's name associated with every new discovery. In all these ways the student can be brought to an understanding of nature, living and inanimate, to a knowledge that will develop head and hand and heart.



ORD HIGH SCHOOL



FREMONT HIGH SCHOOL

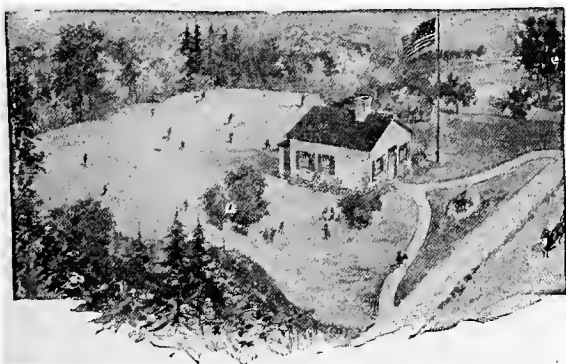


DIAGRAM No. 1

This illustrates the school grounds after some years' growth, the grounds being originally laid out after the plan shown in Diagram No. 2.

Ornamentation of the School Grounds

BY WILLIAM H. BARNES, SECRETARY OF HORTICULTURE, TOPEKA, KAN.

Seeing in *The Youth's Companion* your article on this subject, I beg to offer the following:

I have long been an advocate of the ornamentation of our district school grounds, and have frequently addressed Kansas audiences upon the subject.

I long ago discovered that the real reason why they are not made attractive is their limited area. Our people in the West, notwithstanding the low value of land, brought with them the idea that a quarter-acre or half-acre was enough land to waste (?) around a schoolhouse. Outdoor exercise (recess) is an essential part of an education, and a herd of scholars playing ball, duck-on-a-rock, quoits, leap-frog, skipping ropes, rolling hoops or tag in the public road should be prohibited. If the school director should happen along with his team, and the team shies at the children or their belongings, he would grumble and complain as do others.

If we ornament the grounds with "keep off the grass" signs, where will they play? In the West, where land is cheap, we should have taken five acres for grounds about each schoolhouse. The dis-

trict should put up swings of various kinds, furnish ball clubs, skipping ropes, quoits and croquet sets just as freely as globes, maps and models and other indoor paraphernalia, and the teachers should be interested in the plays.

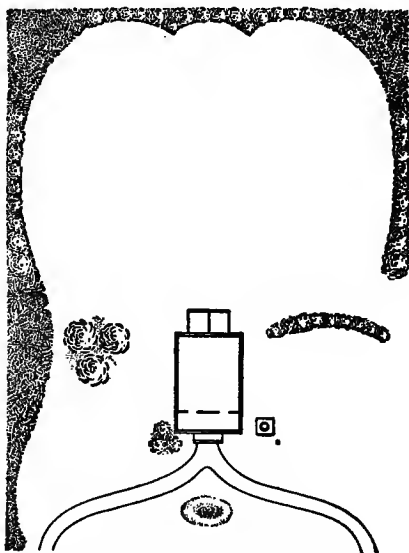
Then, two acres could be parked and beautified, with the house or *bower of beauty* in the midst of a lovely setting.

The scholars should be organized into an *improvement club*. This club should be subdivided into working committees; these committees should each control and care for a certain line of work and improvement.

There is Johnny Doe. He lives in the timber, knows every tree by sight. Put him at the head of the shade-tree committee. With a little assistance and encouragement he and his committee will not only dig, bring and plant the trees, but will care for them lovingly as long as they attend that school, and woe betide the unrulipy "k" that dare cut a notch in, or a switch from, one of them.

Another committee looks after the walks; another after the fences, hitching-posts and buildings; another after the hardy climbing vines to cover the outhouses and clamber over the schoolhouse itself; another to look after the beds of annuals or perennials from which the teacher's desk receives a daily bouquet.

Columns might be written to show the lasting effect such an arrangement would have upon the character of each pupil, and the wholesome effect it would have on the community or district. There are yet hundreds of localities where a few acres could readily be



SKETCH OF PLANTING
DIAGRAM No. 2

added to the present school grounds, two acres for adornment, three acres for playground, all laid out with judgment and cared for by the pupils, the necessary expenses being paid by the district.



HARVARD HIGH SCHOOL



BEATRICE HIGH SCHOOL

Hints on Rural School Grounds

BY PROF. L. H. BAILEY, CORNELL UNIVERSITY

One's training for the work of life is begun in the home and fostered in the school. This training is the result of a direct and conscious effort on the part of the parent and teacher, combined with the indirect result of the surroundings in which the child is placed. The surroundings are more potent than we think, and they are usually neglected. It is probable that the antipathy to farm life is often formed before the child is able to reason on the subject. An attractive playground will do more than a profitable wheat crop to keep the child on the farm.

THE FACTS.—Bare, harsh, cheerless, immodest—these are the facts about the average rural school ground.

Children cannot be forced to like the school. They like it only when it is worth liking. And when they like it, they learn. The fanciest school apparatus will not atone for a charmless school ground.

The following sentences are extracted from the "Report of the Committee of Twelve on Rural Schools" of the National Educational Association (1897):

"The rural schoolhouse, generally speaking, in its character and surroundings is depressing and degrading. There is nothing about it calculated to cultivate a taste for the beautiful in art or nature."

"If children are daily surrounded by those influences that elevate them, that make them clean and well-ordered, that make them love flowers and pictures and proper decorations, they at last reach that degree of culture where nothing else will please them. When they grow up and have homes of their own, they must have them clean, neat, bright with pictures, and fringed with shade-trees and flowers, for they have been brought up to be happy in no other environment."

"The rural schoolhouse should be built in accordance with the laws of sanitation and modern civilization."

HOW TO BEGIN A REFORM

We will assume that there is one person in each rural school district who desires to renovate and improve the school premises. There may be two. If this person is the school commissioner or the teacher, so much the better.

Let this person call a meeting of the patrons of the schoolhouse. Lay before the people the necessity of improving the premises. The cooperation of the most influential men in the district should be secured before the meeting is called.

Propose a "bee" for improving the school grounds. John Smith will agree to repair the fence (or take it away, if it is not needed). Jones will plow and harrow the ground, if plowing is necessary. Brown will sow the grass seed. Black and Green and White will go about the neighborhood with their teams for trees and bushes. Some of these may be got in the edges of the woods, but many of the bushes can be picked up in front yards. Others will donate their labor toward grading, planting and cleaning up the place. The whole thing can be done in one day. Perhaps Arbor Day can be chosen.

THE PLAN OF THE PLACE

This is the most important part of the entire undertaking—the right kind of a plan for the improvement of the grounds. The person who calls the meeting should have a definite plan in mind, and this plan may be discussed and adopted.

BEGIN WITH THE FUNDAMENTALS, NOT WITH THE DETAILS.—If an artist is to make a portrait, he first draws a few bold strokes, representing the general outline. He "blocks out" the picture. With the general plan well in mind, he gradually works in the incidentals and the details—the nose, eyes, beard.

Most persons reverse this natural order when they plant their grounds. They first ask about the kinds of roses, the soil for snowballs, how far apart hollyhocks shall be planted. It is as if the artist first asked about the color of the eyes and the fashion of the necktie; or as if the architect first chose the color of paint and then planned his building. The result of this type of planting is that there is no plan, and the yard means nothing when it is done. Begin with the plan, not with the plants.



CUMING CITY SCHOOL AND GROUNDS, DISTRICT No. 6, WASHINGTON COUNTY



EMERSON SCHOOL, KEARNEY

THE PLACE SHOULD MEAN SOMETHING.—The home ground should be homelike, retired and cozy. The school ground should be set off from the bare fields, and should be open enough to allow of playgrounds. It should be hollow—well-planted on the sides, open in the interior. The side next the highway should contain little planting. The place should be a picture, not a mere collection of trees and bushes. Fig. 25 shows what I mean.

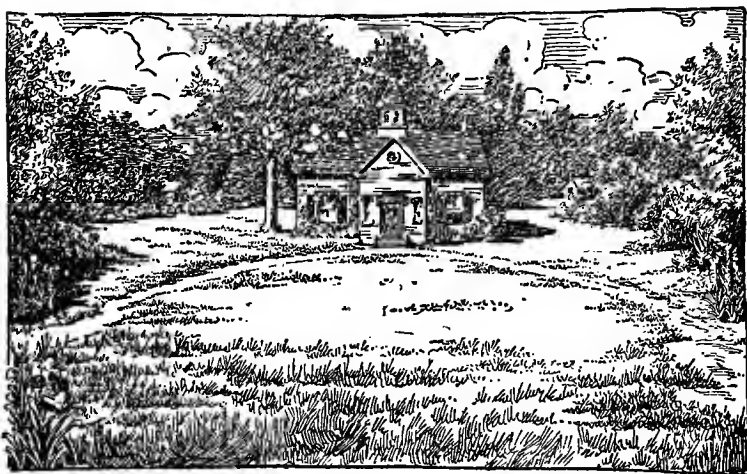


FIG. 25.—A picture, of which a schoolhouse is the central figure

As seen in the picture (Fig. 25), this style of planting seems to be too elaborate and expensive for any ordinary place. But if the reader will bear with me, he shall learn otherwise.

KEEP THE CENTER OF THE PLACE OPEN.—Do not scatter the trees over the place. They will be in the way. The boys will break them down. Moreover, they do not look well when scattered over the whole area. When an artist makes a picture with many people in it, he does not place the persons one by one all over his canvas; he masses them. Thereby he secures a stronger effect. He focuses attention, rather than distributes it.

The diagrams (Figs. 26, 27) make this conception plain. The same trees and shrubs can be used to make either a nursery or a picture. But it is more difficult to make the nursery, and to keep

it in order, because the trees grow one at a place in the sod, and they are exposed to accidents.

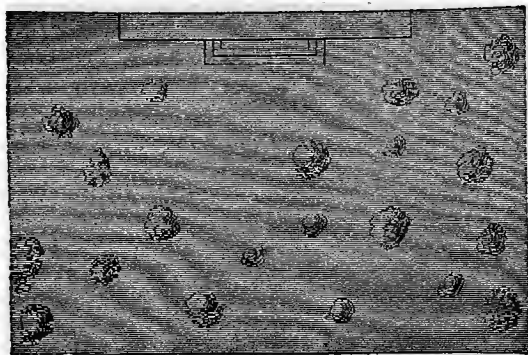


FIG. 28.—Common or nursery type of planting

Go to the black-board. With four lines represent the borders of the school grounds, as in Fig. 28. Indicate the schoolhouse and the outbuildings.

Existing trees may be located by small circles. Now you have the facts, or the fixed points.

Now put in the walks. The first fixed point is the front door. The other fixed point is the place or places at which the children enter the grounds. Join these points by the most direct and simplest curves possible. That is all there is of it. In many, or perhaps most places, the house is so near the highway that only a straight walk is possible or advisable.

Next comes the planting. Let it be irregular and natural, and represent it by a wavy line, as in Fig. 28. First of all, cover up the out-houses. Then plant heavily on the side, or in the direction of the prevailing wind. Leave openings in your plan wherever there are views to

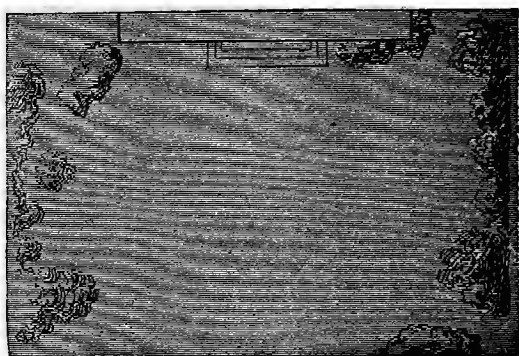


FIG. 27.—The proper or pictorial type of planting

be had of fine old trees, attractive farm homes, a brook, or a beautiful hill or field. Throw a handful of shrubs into the corners by the steps and about the bare corners of the building.



DISTRICT SCHOOL No. 9, DODGE COUNTY



PILGER PUBLIC SCHOOL



ATHENS SCHOOL, AUBURN
Six Rooms



ANTIOCH SCHOOL, AUBURN
Eight Rooms

You now have a plan to work to. It has been the work of five minutes at the blackboard.

Sometimes the problem is not so simple as all this. There may be three entrances to the grounds and a highway on two sides. Fig. 29 is a plan made for such a place in western New York. It was thought to be necessary to separate the playgrounds of the boys and girls. This was done by a wide hedge-row of bushes running back from the schoolhouse.

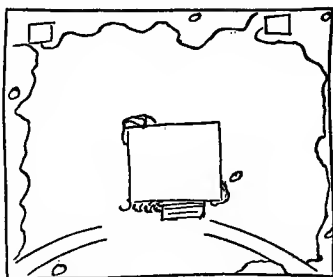


FIG. 28.—The blackboard plan

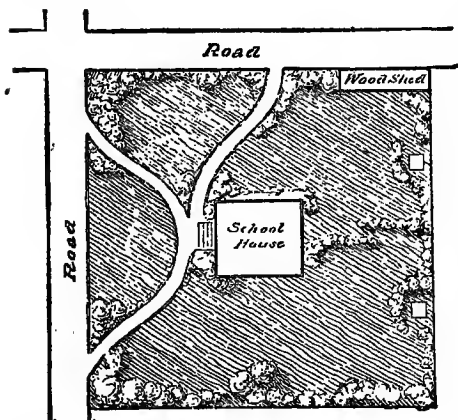


FIG. 29.—Suggestions for the planting of a school-yard upon four corners. From "Lessons with Plants."

Perhaps some persons object to so much shrubbery. They look upon it as mere brush. Very well, then use trees alone. But do not scatter them hit and miss over the place. Give room for the children to play; and make the place a picture at the same time. Three or four trees may be planted near the building to shade it, but the heaviest planting should be on the sides.

MAKING THE SOD.—In many cases the school yard is already level or well graded and has a good sod, and it is not necessary to plow it and re-seed it. It should be said that the sod on old lawns can be renewed without plowing it up. In the bare or thin places, scratch up the ground with an iron-toothed rake, apply a little fertilizer, and sow more seed. Weedy lawns are those in which the sod is poor. It may be necessary to pull out the weeds; but after they are out, the land should be quickly covered with sod, or they will come in again. Annual weeds, as pigweed, ragweed, can usually be crowded out by merely securing a heavier

sod. A little clover seed will often be a good addition, for it supplies nitrogen, and has an excellent mechanical effect on the soil.

The ideal time to prepare the land is in the fall, before the heavy rains come. Then sow in the fall, and again in early spring on a late snow. However, the work may be done in spring, but the danger is that it will be put off so long that the young grass will not become established before the dry, hot weather comes.

THE KINDS OF PLANTS FOR THE MAIN PLANTING.—We now come to the details—the particular kinds of plants to use. One great principle will simplify the matter: the main planting should be for foliage effects. That is, think first of giving the place a heavy border mass. Flowers are mere decorations.

Select those trees and shrubs which are the commonest, because they are cheapest, hardiest and most likely to grow. There is no district so poor and bare that enough plants cannot be secured, without money, for the school yard. You will find them in the woods, in old yards, along the fences. It is little matter if no one knows their names. What is handsomer than a tangled fence-row?

Scatter in a few trees along the fence and about the buildings. Maples, basswood, elms, ashes, buttonwood, pepperidge, oaks, beeches, birches, hickories, poplars, a few trees of pine or spruce or hemlock—any of these are excellent. If the country is bleak, a rather heavy planting of evergreens about the border, in the place of so much shrubbery, is excellent.

For shrubs, use the common things to be found in the woods and swales, together with roots which can be had in every old yard. Willows, osiers, witch-hazel, dogwood, wild roses, thorn apples, haws, elders, sumac, wild honeysuckles—these and others can be found in every school district. From the farmyards can be secured snowballs, spireas, lilacs, forsythias, mock-oranges, roses, snowberries, barberries, flowering currants, honeysuckles and the like.

Vines can be used to excellent purpose on the outbuildings or on the schoolhouse itself. The common wild Virginia creeper is the most serviceable.

KINDS OF PLANTS FOR DECORATION.—Against these heavy borders and in the angles about the building many kinds of flowering plants can be grown. The flowers are much more easily cared for in such positions than they are in the middle of the lawn, and they also show off better. Hollyhocks are very effective.



CRETE HIGH SCHOOL



FAIRVIEW SCHOOL, BEATRICE

It is impossible to grow many flowers in the school ground under present conditions, for what is everybody's business is nobody's business; and then, the place is neglected all through the summer.

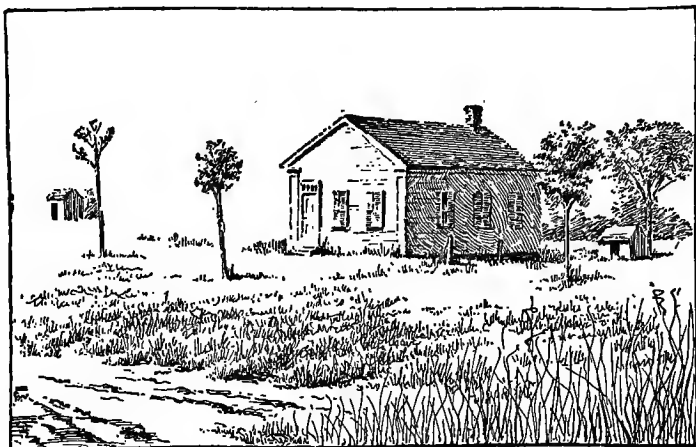


FIG. 31.—Trees enough in the center, but the place needs a background



FIG. 32.—A row of willows makes the place attractive

GENERAL REMARKS

More than one-third of all public schools will probably always be in the country. They will have most intimate relations with rural life. We must make that life attractive to the pupils.

In Europe there are school gardens, and similar plans are recommended for this country. It is certainly desirable that some area be set aside for the actual cultivation of plants by the children, and for the growing of specimens to be used in the schoolroom. However, the conditions of Europe are very different from ours. In the rural school in Germany and other countries, the schoolhouse is the teacher's home. He lives in it or by it. The summer vacation is short. In this country, there is no one to care for the rural school ground in the long summer vacation. Teachers change frequently. It is impossible to have uniformity and continuity of purpose. In the Old World, the rural schools are in the hamlets.

We shall be very glad to correspond with any persons who are interested in improving school premises, either on the lines herein suggested, or in other directions. The improvement must come, or, one by one, the rural schools will die out for lack of pupils. In the struggle for existence, the pupils will more and more seek the more attractive schools. There must be rural schools, whether in the open country or in the hamlet; and wherever they are, they must be cheered and brightened.

A Flower Day every October would be a fitting complement of Arbor Day. Already flower shows have been held in various rural schools. They are symbols of the harvest. We want to focalize this movement in the coming year. We call upon every citizen for sympathy and cooperation.

A revolution in rural school grounds will not come suddenly. Here and there a beginning will be made, and slowly the great work will spread.



BLAIR HIGH SCHOOL



BLAIR HIGH SCHOOL
Assembly Room

The Blair High School

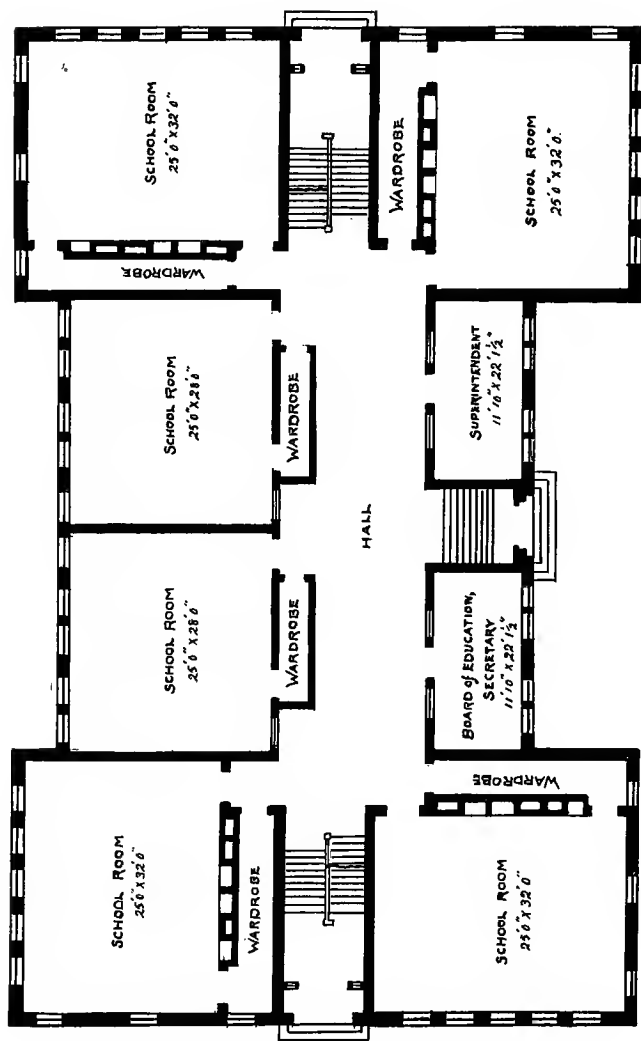
The new high school building at Blair was erected during the school year 1899-1900 at a cost of nearly \$40,000. This amount includes site, sidewalks, heating apparatus and about seven hundred dollars' worth of new furniture. Without these necessary accessories the building cost fully thirty thousand dollars. To pay for this building the School District City of Blair voted \$32,000 in bonds, running twenty years with a ten-year option, with interest at four per cent. These bonds were sold at a premium of several hundred dollars, and the entire proceeds, together with nearly eight thousand dollars in cash in the treasury of the district, were expended in the erection of this magnificent building, under the supervision of the board, the architect, Mr. John Latenser of Omaha, and a superintendent of construction in the employ of the board.

The total length of the building is 126 feet, its width is 79 feet. Each end or wing is about 34 by 79 feet, and the central portion is nearly 60 feet square. It extends east and west, facing south. The main fronts are in the south and east. It is built of dark red pressed brick, with red stone trimmings, and with slate roof. The basement contains a boiler and fuel room in the northwest corner, toilet rooms under the twenty-five by twenty-eight foot schoolrooms, and vacant rooms in the three other corners. The first floor is devoted exclusively to primary and fifth grade pupils, and the second floor to the high school. The old Central building, containing the sixth, seventh, and eighth grades, is located to the northwest of the new building, but on the same block.

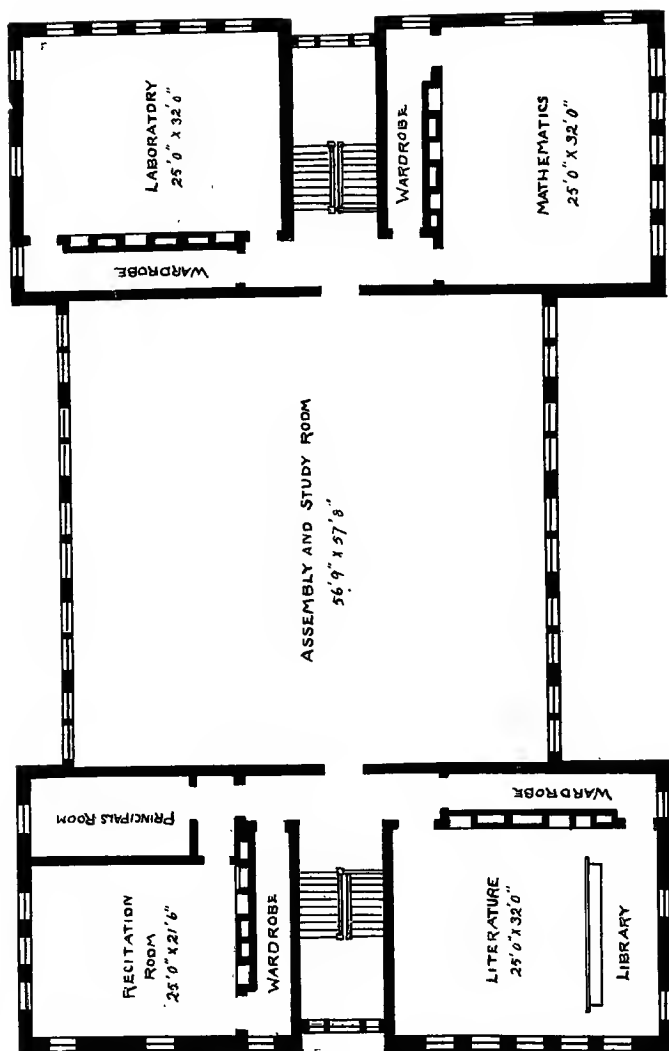
All the walls shown on the first floor plan extend down through the basement to the foundation, with the exception of those between the hall and the two wardrobes near the center of the building; and all those in and surrounding the two wings, the east and west ends, extend up to the roof. The inner walls of the central portion stop at the second floor, and the entire central portion forms on the second floor the high school assembly room. On the first floor there are six grade rooms. The two north central ones are occupied by third and fourth grades, each with a seating capacity of forty-eight pupils. In these the children face east, and each room is lighted by five windows on the north, to the left of the children, and hall and door

windows to the right. There is slate blackboard on the front and rear walls of these two rooms, three and one-half feet in width, and above the front blackboard is another blackboard three feet in width, for writing copies, drills, and practice work. In each corner room there are five windows to the left of the children and two at the rear of the room. All east, south and west windows on both floors have opaque green shades with adjustable roller fixtures, permitting the rollers to be lowered from the top. Blackboards extend across the two inner walls of each corner room, three and one-half feet wide with three feet more above in the front, and three and one-half feet wide to the right. In every room there is an unbroken front wall from corner to corner. There is a teacher's closet set into the wall to the right of the pupils. The ceilings are nearly twelve feet high. The pupils pass through the wardrobe and enter the rear of the room. The wardrobes are three feet six inches wide and have hooks numbered from one to sixty on the longer side. The steam-heated air enters each room near the ceiling, and the foul air vent is close to the floor, both openings being on the inner side wall of the room. The board of education room is used temporarily as a library. There is a drinking fountain on each floor. Each corner room has a seating capacity of fifty-four pupils. The two east ones are used for first and second grades, and the two west ones for the fifth grade. There are two other primary ward buildings in the city, but from the fifth grade up all pupils are concentrated at the new and old Central buildings.

The high school assembly and study room has a seating capacity at present of 200 pupils, which may be increased to 225, leaving ample room for aisles. All the desks in the building are single ones. The pupils face east, receiving the main light from the north and left. The north windows are a little larger than the south ones. The ceiling of the assembly room is sixteen feet high, and is a beautiful design in corrugated metal. There are no pillars or posts in the room. Ten incandescent lamps, sixteen or thirty-two candle power at option, light the room at night. Slate blackboard extends across the front of the room, except at the opening, where there are double doors. There is a platform two steps high and six by fourteen feet in the front of the room. In the rear of the room near the corners are four bookcases built into the room, two on each side, with niches above for statuary. There are two registers or openings for



PLAN OF FIRST FLOOR
BLAIR HIGH SCHOOL



PLAN OF SECOND FLOOR

BLAIR HIGH SCHOOL



BLAIR HIGH SCHOOL.—HALLWAY, FIRST FLOOR



FIRST PRIMARY ROOM, BLAIR

the entrance of the steam-heated air near the center of the room, and a foul air exit in each corner.

THE BASEMENT

The girls use the east entrance to the building, exclusively, and the boys the west. After passing through the outer doors pupils may pass down to the toilet rooms in the basement in privacy, or up into the main hall. The toilet rooms also have outdoor north entrances for the use of the pupils of the old Central, and a trellis fence extends from one building to the other, dividing the grounds. As Blair has no sewerage system, an improved system of dry closets is in use in the toilet rooms. The northeast and southwest corner basement rooms may be used in stormy weather for play or dinner, by the girls and boys respectively. The building is heated with steam. Radiators have been placed in halls and offices, but for the schoolrooms the indirect system, or gravity system, of heating and ventilating is used. The rooms in the basement directly below and corresponding to the first floor wardrobes are cold air chambers. There is no opening from these into the basement rooms, but there is a door into the hall or corridor. The basement window of these cold air rooms is kept open during the day, and the cold fresh air enters, is heated as it passes over and through coils of steam pipes, and then it passes up through flues to the rooms above, which it enters above the blackboards. By crank and chain the teacher may regulate the temperature of the fresh air that enters her room without reducing the amount of air. The raising and lowering of a damper attached to the chain permits the air to pass between the steam-heated coils, or around them, or partly between and partly around them. Foul air vents or exits are near the floor line, those of the second floor rooms being directly above the first floor inlets of fresh air; the first floor outlets are built in between and divided from the two fresh air flues; thus, the columns of air in the foul air flues are heated and kept rising. The foul air vents for the two middle rooms on the first floor are in the floor, and galvanized iron ducts near the ceiling of the basement carry the foul air to the southeast and southwest corner stacks. The fresh air for the central portion of the building enters through the basement windows of the rooms below the secretary's and superintendent's offices, and is conducted through tunnels under the basement floor to cold air chambers below the wardrobes in the

hall of the first floor. A flue from each of these passes up to the high school assembly room on the second floor, where the two have outlet into the room through registers fifty by twenty by thirty inches each. The foul air vents for the assembly room are in the four corners of the room, passing up and out through the ceiling and the highest parts of the roof. Steam and return pipes run from the boilers in the northwest corner to the system of direct radiation in the old Central building.



NON-RESIDENT PUPILS, NELSON HIGH SCHOOL



NON-RESIDENT PUPILS, ORD HIGH SCHOOL

Free High School Attendance

Free attendance at public high schools for the graduates of our rural schools has agitated educational circles in Nebraska for many years. As each school district in the state is independent of all others in its organization, management and course of study, the pupils in rural communities do not have the advantages of those who live in the cities and villages where high schools have been established. Various laws have been devised to provide free instruction for the graduates of the rural schools in the established high schools of the cities and villages, but these laws have been successively declared unconstitutional or have proven to be unsatisfactory. That there is a demand for this free instruction cannot be successfully denied. The illustrations of the non-resident attendants at the high schools of Ord, Nelson and Auburn successfully prove this. In each of the high schools in these small cities there are enrolled a large number of pupils from the rural school districts round about. These pupils are, as a rule, and as their appearance indicates, the cream of the country schools, and not only maintain but raise the standard of the schools that they attend. Every pupil in Nebraska should be granted free school privileges from the kindergarten to the university, as many now are.

HIGH SCHOOL CADETS

The military spirit is quite rife in the state and has been since the Spanish-American war. In many of the cities of Nebraska with a census of from 2,000 to 8,000 are found high school cadet organizations. The village of Elgin with a census of 250 children of school age has its company of high school cadets.

LINCOLN COUNTY SUMMER SCHOOL

On account of the lack of normal school facilities in the central and western portions of the state, summer schools held in connection with teachers' county institutes are common there. This illustration shows the type of the bright young people who teach school in the central and western portions of the state. This school was held during the summer of 1901.

WOMEN COUNTY SUPERINTENDENTS

Among the teachers of Nebraska, including city superintendents and principals, the women outnumber the men about three or four to one. Among the county superintendents the reverse is true with interest. At the present time there are sixteen women and seventy-four men among the county superintendents in the state. During the past biennium there were eighteen women. Mrs. Eva J. Case of Webster county retired from office January 9 after seven years' faithful and efficient work in that capacity. Miss Bertha Thoelecke retired from the office of superintendent of Lincoln county schools on January 9, after two terms of faithful and efficient service. Lincoln county is forty-eight by fifty-four miles in area, and is divided into 107 school districts. The dangers, privations and exposure to which the women county superintendents in the central and western portions of the state, the frontier counties, are exposed, are but little understood or appreciated, even by the people of their own counties.



NON-RESIDENT PUPILS, AUBURN HIGH SCHOOL



CADETS, AUBURN HIGH SCHOOL

Rural School Conditions in Nebraska

A general idea of the kind of school buildings in this state may be gathered from the illustrations and descriptions in this publication, from Statistical Table No. II, showing the number of frame, brick, stone, log and sod schoolhouses in each county in the state during the school year 1900-1901, and Table No. I, showing the changes in the number of schoolhouses of the different materials from the year 1869 to 1901. Space forbids extended description of conditions in each of the ninety counties in the state, but we herewith submit information gathered by letter and by personal visitation in a number of representative counties. The conditions in different parts of the state are so vastly different that personal inspection only would convince one of it or impress one with the difference in problems presented to any one concerned or interested in school conditions in Nebraska and their improvement.

BANNER COUNTY

Here is a county in the extreme western portion of the state on the Wyoming line, without a high school or a railroad in it. At the county seat two teachers are employed, a term of eight months of school is held during the year, and the principal is paid \$30 per month. One-half the number of schoolhouses in the county are furnished with patent desks and slate blackboards. The other half have home-made desks and wooden blackboards. There are five districts in the county having practically no outhouses on the school grounds.

BLAINE COUNTY

Blaine county is situated in the central portion of the state. In this county there are nine rural schoolhouses. Two of these are frame and the rest are built of sod. In two there are patent desks, in two others there are both home-made and patent desks, and in five schoolhouses there are home-made desks only. Three buildings are furnished with slate blackboard, while the others have painted boards. One district has two separate outhouses, three have two under the same roof, and the rest have one or practically none. Two of the schools in Blaine county graduated pupils from the eighth grade last year, which is the highest grade in any school in the

county, although in some schools higher branches are being taught. Teachers are being paid from \$25 to \$40 per month. The county superintendent writes that quite an interest is being manifested by both patrons and pupils and that in the near future Blaine county will rank among the first in education.

BOX BUTTE COUNTY

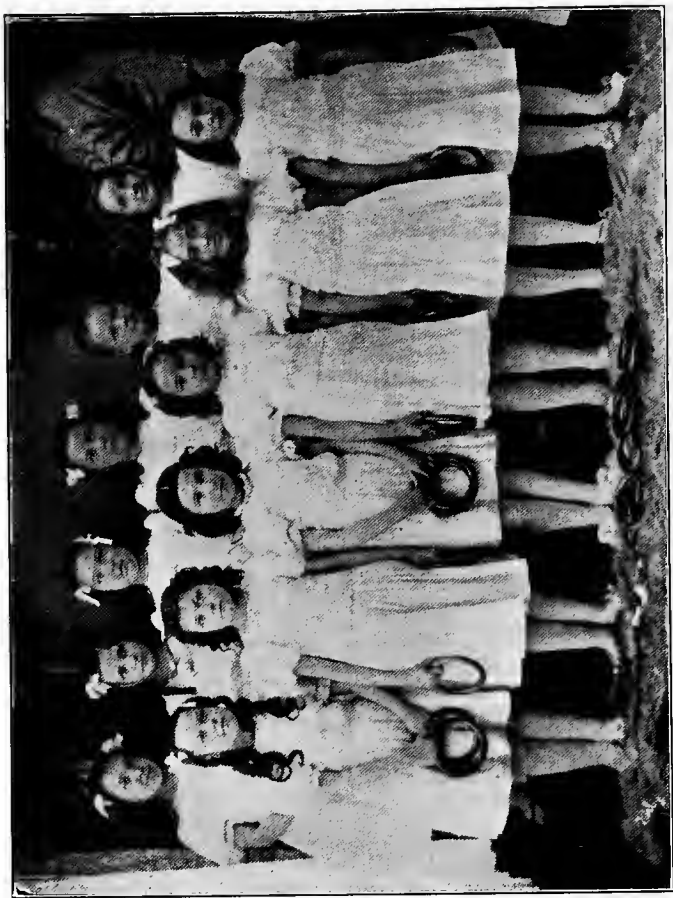
This county is in the extreme northwestern part of the state. There are about sixty schoolhouses in the county, and nearly one-half the children in the county are in the city of Alliance. There are sixty-five square miles unorganized into school districts with perhaps a score or two of children living in this unorganized territory. About one-half the buildings have patent desks and the others home-made ones. Thirteen rooms have slate blackboards, five have hyloplate, five have cloth, four have plaster and twenty-nine have wooden blackboards. Nearly all schools are supplied with maps and charts, and all but two furnish text-books to pupils.

CASS COUNTY

Cass county is situated in the eastern portion of the state on the Missouri river. There are an even hundred school districts in this county. Five of these are organized as high school districts, viz., Plattsmouth, Weeping Water, Louisville, Greenwood and Elmwood. Union, Nehawka, Avoca, Eagle, Alvo, Murdock, South Bend and Murray are graded village schools employing two or three teachers. All the above are fairly well equipped with furniture, apparatus, etc. All except Nehawka and Murray are under the free text-book system. All the rural schools of the county have patent desks, though a considerable number have the senseless, noisy, out-of-repair folding desks. A large number of the schools have seats too large for the smaller pupils, and many of the desks are too far apart. This is a matter of great importance. One district has a paper blackboard, three have both wood and plaster, two have cloth, six hyloplate, thirteen wood, twenty-eight plaster and forty-seven have slate. Nearly all the blackboards are in good condition. Special attention has been paid to such matters. Ninety-five have two separate outhouses, three are under one roof and two have but one outhouse. Less than two years ago there were more than a dozen with but one outhouse.



CADETS, ELGIN PUBLIC SCHOOL



RING DRILL, ELGIN PUBLIC SCHOOL

DEUEL COUNTY

Here is another county in the western portion of the state, large in area, largely unorganized, with the Union Pacific railroad passing through the extreme southern portion and the Burlington just beyond the northern boundary. There are about fifty schools in the county, thirty of which have home-made desks. About twenty-five have slate blackboards and the others are supplied with wooden blackboards. Every schoolhouse in the county has two separate outhouses.

HITCHCOCK COUNTY

This county is in the southwestern portion of the state. Three-fourths of the schoolhouses are provided with patent desks. The others have home-made desks or some home-made and some patent ones. About one-fourth of them have slate blackboards, but the majority have plaster boards. One-half the districts have two separate outhouses, the others having but one each. The latter are mostly small schools of a few pupils. Some of their school boards thought it wise to procure a bookcase instead of erecting an additional outhouse.

LINCOLN COUNTY

This is a large county in the west-central portion of the state, forty-eight by fifty-four miles in extent. It is crossed from west to east by the Platte river and the Union Pacific railroad. There are more than twenty sod schoolhouses in this county, but the schoolhouses generally are quite well furnished. Sixty-two school grounds are fenced, mostly with barb wire, while sixty-four others are not fenced. There are one hundred twenty-four buildings with patent desks and only two with home-made ones. Slate blackboards are found in seventy-seven houses, plaster boards in seventeen houses, wood in thirteen, hyloplate in eleven and cloth blackboards in eight school buildings. Seventy-five districts have a coal house, forty-one have a coal box. Eighty-four districts have two separate outhouses, twenty-four have two under one roof, sixteen have but one such building, and two have none.

RICHARDSON COUNTY

This county is in the southeastern corner of the state, bordering on Kansas and Missouri. During the last term five new school-houses were erected, but as the county is an old one and was early settled there are many more that should be replaced soon. There are over one hundred schools in the county and all are provided with patent desks. Forty have slate blackboards, twenty have plaster, forty-four have wooden, and a few have some cloth or paper or hyl-plate. Nearly all schools are fairly well equipped, but a few of the poorest districts are very inadequately provided with anything.

SARPY COUNTY

This is a county in the east-central portion of the state, south of Douglas of which Omaha is the county seat. All schools are provided with patent desks, a few of which are in bad repair, and many of these are being replaced with single desks. About one-half the schools have slate blackboard. The others have plaster or painted boards. All have blackboards of some kind. This county has the two extremes in design of frame schoolhouses. The older buildings are of the familiar old box-car style, while the new ones are being built on modern plans.

SAUNDERS COUNTY

Saunders county is situated in the east-central portion of the state. Nearly all the schools in this county are provided with patent desks. There are a few home-made ones in two or three schools. Four-fifths of the schools have some slate blackboard; many of them have nothing else. There are eight or ten with wooden boards, a few with plaster boards, and a few other schools with other kinds of boards, but all the schools in the county are provided with blackboards, and the slate boards are rapidly displacing all other kinds. There is not a district in the county without two outhouses, and only a few that have the two under one roof.



LINCOLN COUNTY SUMMER SCHOOL, 1901



MRS. EVA J. CASE
Webster County



MISS BERTHA THOELECKE
Lincoln County

Our Illustrations

The illustrations in this volume are believed to be fairly representative of the general appearance and condition of school buildings in Nebraska. Certain types, perhaps, predominate, and other typical buildings in the state are not represented, but a careful scrutiny of these illustrations and a study of Statistical Table No. I near the close of the volume, exhibiting the number of schoolhouses of wood, brick, stone, log and sod, respectively, will prevent one from forming a wrong impression of the actual material school conditions in Nebraska. The log schoolhouses form less than two per cent of the total number of schoolhouses in Nebraska, and the sod houses less than seven per cent of the total. Some of the latter may be valued at little more than the cost of the doors and door frames, the window sashes and window frames, the flooring, and the shingles where they have a shingle roof; and from this low valuation we must range up all the way by hundreds, thousands, and tens of thousands of dollars to almost two hundred thousand dollars to include the cost of all the several kinds of school buildings in the state. The value of school district property in the state is estimated at nearly ten millions of dollars.

Although representative, these illustrations are not used here as models for school buildings. Some of them are far from it. Nearly all the photographs and cuts received at the state department are here used, principally for the purpose of showing what exists in the state and the great differences in conditions. Some of the frame and brick buildings herein pictured are very poorly arranged within, incorrectly lighted, without any ventilation except by doors and windows, and sometimes when the arrangement of windows makes an excellent light any good results have been counteracted by an improper placing and arrangement of the desks. The Sutherland rural schoolhouse in district No. 20 of Washington county, the new brick schoolhouse in district No. 3 of Fillmore county, the Calhoun building, the Blair high school building and the Omaha buildings, with a few others, may be referred to as models.

One great obstacle to the erection of better school buildings in Nebraska is the small size of many of the districts and their consequent low assessed valuation. The school laws of Nebraska say that

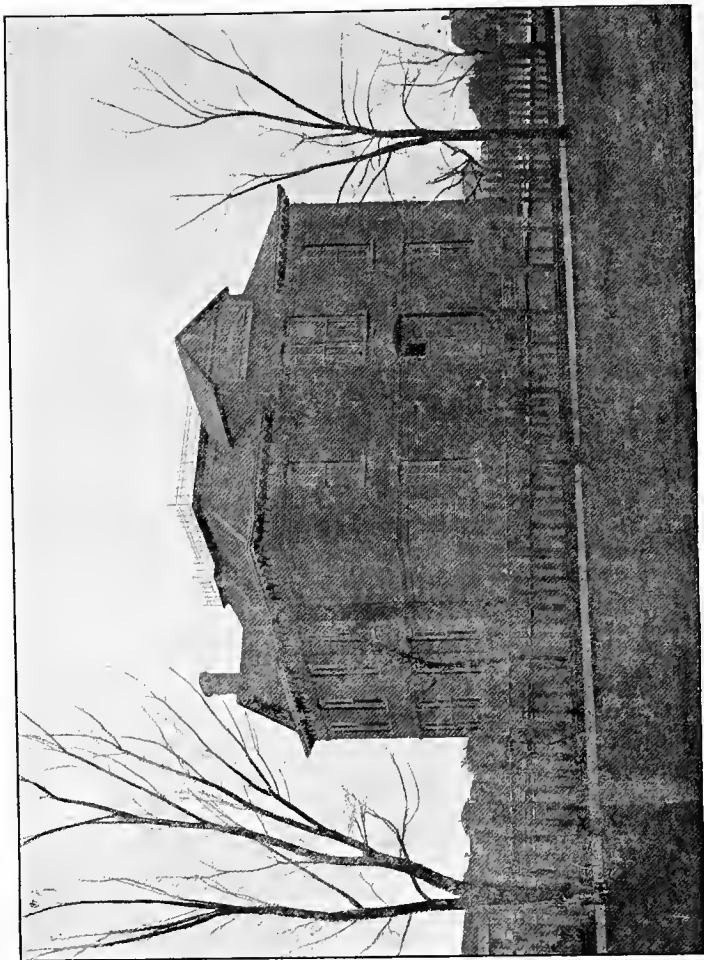
bonds for the purpose of purchasing a site for, and erecting thereon, a schoolhouse or schoolhouses may be voted and issued in an aggregate amount not to exceed five per cent of the last complete assessment of the taxable property of the district, except in districts having more than two hundred children of school age; in districts having two hundred or more children, the amount of bonded indebtedness must not exceed ten per cent of the last complete assessed valuation. In many rural school districts of Nebraska the assessed valuation is only a few thousand dollars, and five per cent of the amount will not raise five hundred dollars for the purchase of a site and the erection of a schoolhouse thereon; sometimes not two-thirds of the amount can be realized. In many villages of the state employing three or four teachers, with a school census of 150 to 190 children, requiring a four-room school building, the total assessed valuation is often not in excess of \$50,000, five per cent of which would not build much more than one-half of a good four-room school building. The remedy lies in larger, richer, more populous school districts. Small districts with a few children are too highly expensive.

NEW OMAHA HIGH SCHOOL BUILDING

Omaha, the metropolis of Nebraska, very naturally boasts of the finest high school building in the state. The east wing only of the new building is now completed at a cost of about \$190,000. It was dedicated Saturday, February 1, 1902, and on the following Monday morning the Omaha high school moved into its new commodious quarters. This wing contains about thirty rooms, including eighteen class rooms, two study rooms, laboratories, library, gymnasium, office rooms, etc. The class rooms are twenty-four feet square and designed to accommodate thirty pupils each. The study rooms will seat about 200 pupils in each. In place of cloak rooms 540 double lockers are provided in the halls, and there are also twelve toilet rooms, four on each floor. The indirect system of steam heating is used and the plenum system of fan ventilation. Natural slate blackboards are used throughout. The lighting is from the left and rear of the pupils as they are seated. The building is solid and substantial in construction, artistic in exterior appearance and beautiful in interior finish, and constructed of the best material throughout. In future years the old high school building, of which all except the tower is now hidden from view from the east, will be removed



GRANT SCHOOL, NORFOLK



OLD FIRST WARD SCHOOL

and a building similar to the illustration following that of the wing will take its place.

DISTRICT SCHOOLS IN HALL COUNTY

The school building in district No. 70 of Hall county was erected in the fall of 1886 at a cost of about \$500. It contains patent desks, a blackboard made of poplar lumber and lampblack, but no apparatus. The schoolroom is heated by a stove and ventilated by windows. There is a cloak room, although it is probably in darkness, and the schoolroom is lighted by three windows on each side.

The school building in district No. 51 was erected in 1888 at a cost of about \$300. It contains patent desks, a small amount of slate blackboard and some charts. There is no entry way or cloak room, and, like the schoolhouse in district No. 70 and many others in all parts of Nebraska, it is lighted by three windows on each side. It is heated by a stove and ventilated by windows.

DISTRICT SCHOOL NO. 54, CHERRY COUNTY

This sod schoolhouse was erected in 1897 at a cost of \$50. The photograph of it was probably taken during an eclipse. It contains home-made furniture, about five feet of painted blackboard and no apparatus. It is lighted by one window on each side. There is no system of ventilation and none is needed. The irregular appearance of the corners is caused by cattle rubbing against them. The building is now protected by a wire fence. The roof is covered with sod. This is not a typical Cherry county schoolhouse. Many good frame school buildings have been erected in that county within the past three years.

DISTRICT SCHOOL NO. 69, ROCK COUNTY

This building was not erected for school purposes. It is a home, but school is held in it. It was erected in 1895 and is furnished with modern desks, wooden blackboards, no apparatus and a stove. The lighting is, naturally enough, very poor, while the chief characteristic of the building is its warmth.

WASHINGTON SCHOOL, NEMAHIA COUNTY

This school is in district No. 24, and is just the ordinary type of school building to be found in many school districts in the south-

eastern portion of the state. The teacher, Miss Hattie Miller, and the county superintendent, W. C. Parriott, both appear in the illustration.

DISTRICT SCHOOL NO. 1, MERRICK COUNTY

This schoolhouse was erected in 1885 at a cost of about \$1,200. It is located at Lockwood station on the Union Pacific railroad, in the southeastern corner of Merrick county. Its outward appearance is much the same as other schoolhouses in the eastern portion of the state. There are about thirty-five pupils enrolled, and the teacher, Mr. Edw. D. Patterson, is now serving his eighth year in that district. As may be seen in the illustration, it contains single desks, slate blackboard, a liberal supply of maps and charts, a dictionary, library, museum, etc. There are, however, no cloak rooms, and no system of heating and ventilating other than by the stove and windows. The room is lighted from the left, right and rear.

DISTRICT SCHOOL NO. 19, FRONTIER COUNTY

This curiosity in the shape of a school building was erected about 1892 at a cost of \$15. It is not a representative schoolhouse and never was. It was replaced in the summer of 1901 by a good frame schoolhouse. It contained home-made furniture, a small wooden blackboard, no apparatus, a stove and a system of ventilation through chinks in the wall. There was a door in one side and a window in each of the three other sides. Nearly all the school districts in Frontier county have good frame buildings, old-fashioned perhaps, but commodious enough and well furnished. There is only one log schoolhouse in existence in that county at present, and it is well built and properly furnished.

THE LONG SCHOOL, OMAHA

This building and the other Omaha buildings illustrated in this volume were all designed by Mr. John Latenser. The Long school cost nearly \$25,000. It contains eight school rooms, an office and a supply room. There are also play rooms in the basement. All grades below the high school, including the kindergarten, are represented. The furniture, blackboard and interior finish are all of the best. It is heated with a furnace, and the gravity system of ventilation is in use. There are both cloak rooms and toilet rooms



BEATRICE SOUTH WARD SCHOOL



BEATRICE EAST WARD SCHOOL



RED CLOUD HIGH SCHOOL



MADISON HIGH SCHOOL

in the building. All schoolrooms in buildings designed by Mr. Latenser are lighted from the left of the pupils by four, five or six windows, with perhaps two to the rear.

FRANKLIN PUBLIC SCHOOL

This building was erected a little more than a year ago at a cost of \$8,000. It contains seven schoolrooms, two recitation rooms and a library, and it houses all the grades from the first to the tenth inclusive. The desks are patent ones, partly single and partly double. Green hyloplate blackboards are in use. It was built for a system of heating by means of hot air, but stoves are still being used. There is no system of ventilation, but it contains cloak rooms. Some of the rooms are lighted from the left and rear, some from the right and rear. It contains broad halls and stairways, with three exits. The interior arrangement is quite convenient.

CALHOUN PUBLIC SCHOOL

This is a model four-room frame school building erected one year ago at a cost of about \$6,000. Besides the four schoolrooms it contains an office. It is the only school building in Calhoun and accommodates the ten grades there. One room has been seated with new single seats, while in the others the double seats from the old building are in use. The plaster blackboards are still in use, but at any time in the future these may be covered with natural slate. The building is properly heated and ventilated by the hot air system. All schoolrooms are lighted from the left and rear. A complete description of the floor plans of the building is given elsewhere under Model Plans for Village Schools.

THREE NORTH PLATTE HIGH SCHOOLS

These illustrations show the evolution of the high school in one of the most enterprising cities in the western portion of the state, North Platte, on the Union Pacific railroad. We have here the first log schoolhouse erected in the town in 1868, the old-fashioned brick schoolhouse that took its place in 1873, and the modern high school building erected two years ago at a cost of \$30,000. This latter contains an assembly room, eight schoolrooms, four class rooms, two office rooms and a library. There are also cloak and

toilet rooms. All grades from the sixth to the twelfth inclusive are represented in this building. Excellent new single desks, slate blackboard and all apparatus required for efficient school work are supplied. The building is properly heated by steam and ventilated with air flues from each room. The rooms are also properly lighted.

SUPERIOR SCHOOL BUILDINGS

The North school in Superior was erected in 1890 at a cost of \$12,000. It contains four rooms with grades below the eighth only. It is seated with single desks, furnished with plaster blackboard and heated with steam. It is ventilated, but the windows were arranged with reference to their appearance from the outside rather than with reference to the convenience and the eye-sight of the children within.

The Superior high school building was erected in 1885 at a cost of \$14,500. It contains eight rooms, including rooms for the first three primary grades, two laboratories, assembly and recitation rooms and an office. Its other equipment, heating and ventilation are similar to the North building of Superior.

PLEASANT PRAIRIE SCHOOL, PAWNEE COUNTY

This schoolhouse is located in District No. 14. It was erected in 1893 or 1894 at a cost of about \$1,700. It is built of brick, and contains a large schoolroom that will seat seventy-two pupils in single desks. There is slate blackboard around the entire room, and it is well provided with maps, charts and apparatus generally. It is located three miles east of Pawnee City in the center of a school district comprising nine sections of land, with a total assessed valuation of \$53,275. There are windows on all four sides of the room. The front and rear walls appear in the illustrations. The building has a tower with a large bell in it. The district has nine months of school each year, and pays the teacher a good salary.

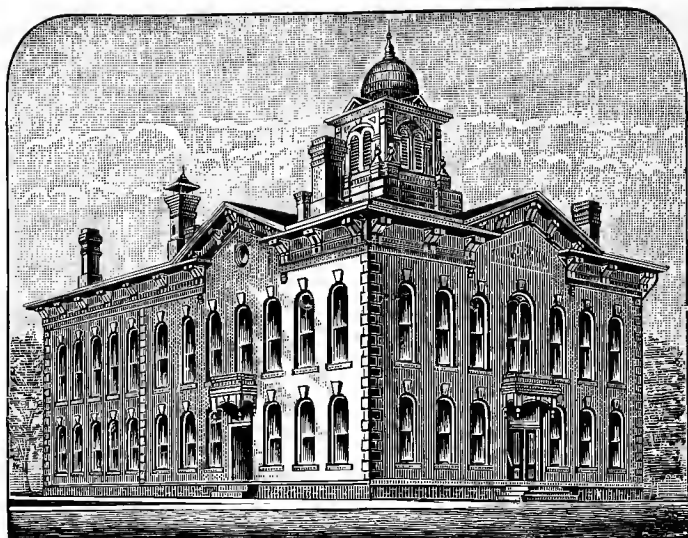
EUSTIS PUBLIC SCHOOL

The illustrations used are of the intermediate department at Eustis. There is in that little village a two-room building erected in 1888 at a cost of \$1,400, containing the intermediate and grammar departments, and a one-room building for the primary department.



SUPERIOR HIGH SCHOOL





ASHLAND HIGH SCHOOL



PONCA PUBLIC SCHOOL

ment erected in 1899. The two buildings have a full block of ground.

OMAHA GRADED SCHOOLS

The Cass, Saunders and Pacific schools of Omaha are all much alike in their general plan and convenience of interior arrangement.

The Cass school was erected in 1900 at a cost of \$49,000. In size it is what is known as a sixteen-room building and in addition to the sixteen schoolrooms contains one principal's office, one teachers' room and play rooms in the basement. The eight grades below the high school are all represented in this building. It is furnished with the best single desks and natural slate blackboard. The indirect system of steam heating is used and the gravity system of ventilation. There is one cloak room in connection with each schoolroom and two toilet rooms in the basement, one for each sex. The pupils in each room are seated so as to face an unbroken front wall, with five or six windows at the left and two in the rear of the room.

The Saunders school was erected in 1900 at a cost of \$32,000. It contains ten schoolrooms, a principal's office, a teachers' room and play rooms in the basement. It is similar to the Cass school in the features mentioned above, except that a furnace is used in heating and a fan in ventilating.

The Pacific school was erected in 1900 at a cost of \$48,000. It is also a sixteen-room building and is very similar to the Cass school in interior arrangements and conveniences, heating, ventilation, cloak and toilet rooms. A greater difference is apparent in the illustrations of the Cass and Pacific schools than can be found when one is within the buildings. The differences are mainly in the "trimmings," although it cannot be honestly said that either building is over-trimmed. They are architecturally beautiful in their simplicity.

SIDNEY PUBLIC SCHOOL

This building was erected in 1887 at a cost of \$17,500. It is a substantial stone structure, although the entire roof and gable ends are of wood. It contains six schoolrooms, two recitation rooms, one study and one library room. The furniture is modern and the blackboard a natural slate. The building is heated with a furnace and ventilated. It contains cloak rooms, but the schoolrooms are lighted from the left and rear or from the right and rear according to location.

STERLING PUBLIC SCHOOL

There are a number of school buildings in the state of Nebraska quite similar to the Sterling building in structure and appearance. The Syracuse building illustrated elsewhere differs but little from the Sterling schoolhouse. This building was erected in 1890 at a cost of \$10,000. It contains six schoolrooms, and they have eleven grades in the building. The furniture is good, the blackboards are concrete and there is a fair supply of apparatus. The building is heated with a furnace and properly ventilated. There are cloak rooms in connection with the schoolrooms, and the schoolrooms are lighted from the left and rear.

COLERIDGE PUBLIC SCHOOL

This four-room school building was erected in 1889 at a cost of \$5,000. There are ten grades here, good furniture, slate blackboards and some apparatus. The rooms are heated with stoves with an insufficient amount of ventilation through chimney flues. Cloak rooms are provided, but the light enters the schoolrooms from three sides.

CEDAR BLUFFS PUBLIC SCHOOL

This schoolhouse is in district No. 107 of Saunders county. Part of it was erected fifteen years ago, and part of it last year, and it will be seen in the illustration that no improvement was made in the architecture on the addition. The cost of the building was about \$6,000. It contains six rooms, including four schoolrooms, one recitation or office room and one room not finished. There are ten grades represented here. The high school room contains single seats, the others double ones. In three of the rooms there is slate blackboard. The rooms are heated with stoves with no arrangement for ventilation. The halls are large and are used for cloak rooms. The rooms are lighted from three sides. The building is provided with a fire escape.

ANSELMO PUBLIC SCHOOL

This building was erected in 1889 at a cost of about \$2,500. It is a four-room building, although only two of the rooms are now in use. The blackboards are of plaster. The rooms are heated with stoves and without a system of ventilation. The halls are used as



WAKEFIELD PUBLIC SCHOOL



HASTINGS HIGH SCHOOL



LOUP CITY PUBLIC SCHOOL



MINDEN HIGH SCHOOL

cloak rooms. The building was poorly constructed so that it was necessary to expend \$400 on repairs recently. It is now reported to be in good condition.

DISTRICT SCHOOLS IN HALL COUNTY

The schoolhouse in district No. 13 was erected in 1898 at a cost of \$1,200. This building is like many another in the state, but it is larger than the average. There is a cloak room or entry way and a large, roomy schoolroom. This room is quite attractive with new desks, a good heating stove, clean walls, pictures, mottoes, etc., all of which make the room appear very homelike. The result is an excellent school spirit in that district and a crowded schoolroom whenever special day exercises are held.

The schoolhouse in district No. 74 is a duplicate of the building in district No. 1 of Hall county. The latter is quite fully described a number of pages further on.

GENEVA SCHOOLS

The Geneva ward school, a two-room building, was erected in 1888 at a cost of \$4,000. The first and second primary grades only are housed here. The building is a brick one with slate blackboards, but it is heated with stoves, ventilated by means of doors and windows, and the rooms are lighted from the right of the children.

The interior view is of a third grade schoolroom in the high school building.

The Geneva high school building, illustrated further on, was erected in 1883 at a cost of \$7,000. It contains six schoolrooms and one recitation room, and all of the grades from the third to the eleventh. The building shown in the illustration to the rear of the high school building is also used for school purposes and contains two rooms. The high school building contains slate blackboards, good furniture and apparatus and is heated with stoves without a system of ventilation. There are no cloak rooms in connection with the schoolrooms.

DISTRICT SCHOOL NO. 7 OF PERKINS COUNTY

This schoolhouse was erected in the fall of 1900 at a cost of \$204. The building represents three years of hard saving and planning on the part of the district. One year they went without school en-

tirely, and then had to join two districts together in order to get \$200 with which to build this schoolhouse. The blackboards are home-made, and the ventilation is accidental and incidental. Perhaps the chief characteristic of the building is the cheapness with which it was constructed.

MAPLE GROVE SCHOOL, HAMILTON COUNTY

This schoolhouse is located in district No. 14, two and one-half miles southwest of Aurora. It was erected in 1885 at a cost of \$1,000. There are two cloak rooms and a vestibule besides the schoolroom proper. It is seated with both single and double desks and has slate blackboards. The building itself is twenty-two by thirty-six feet with a twelve-foot ceiling. There is a large basement in the building walled up with limestone and divided into two compartments, one for coal and the other for cobs. The stairway is on the inside. The school grounds include three acres, covered with blue grass and surrounded with three rows of trees, ash, maple and box-elder. The flag seen in the illustration was won at a county fair. There is a twenty-foot flag pole not seen in the illustration.

DISTRICT SCHOOL NO. 33, LINCOLN COUNTY

The schoolhouse in this district was erected in 1889 at a cost of \$2,500. It contains two schoolrooms, a grammar department and a primary department. There are patent school desks, slate blackboards and \$800 worth of various kinds of apparatus. The rooms are heated with stoves but not ventilated. There are also cloak rooms and a sliding partition between the two schoolrooms. The district lies in the valley between the North and South Platte rivers in the heart of the oldest irrigated section of Lincoln county. The yard contains two acres of land and is fenced with posts and piping. It contains all kinds of fruit trees with a row of Carolina poplars around the outer edge. The district pays as high as \$50 a month to its teachers.

ABIE PUBLIC SCHOOLS

Abie is noted for the honor of always appearing first in the alphabetical list of the graded schools of the state. The larger building in the illustration was erected in 1887 at a cost of \$1,000 and the smaller one in 1896 at a cost of \$500. The rooms are



NORFOLK HIGH SCHOOL



AUBURN HIGH SCHOOL,

seated with double desks and heated with stoves. There is no system of ventilation. The light enters from three sides. The blackboards are made of slated paper. The buildings are located on a high hill overlooking the village.

BURWELL PUBLIC SCHOOL

The schoolhouse was erected in 1898 at a cost of about \$1,800. It contains four schoolrooms, each about twenty by thirty-two feet, entirely too narrow. Ten grades are represented in the building. The rooms are furnished with double desks and slate blackboards. The building is heated with a furnace, but ventilated by means of the windows. The light enters from the left and rear of the pupils on one side of the building, from the right and rear on the other side. Burwell expects to erect a new building soon.

SCRIBNER PUBLIC SCHOOL

This is an excellent six-room brick school building that cost about \$12,000 with site. There is a seventh room for recitation purposes. It is furnished with single desks, slate blackboard and excellent apparatus. The rooms are heated with steam with ventilating flues in the chimneys. There are no cloak rooms or toilet rooms in the building. The children hang their wraps in the hallways. The pupils face a middle wall, receiving the main light from the rear.

The interior views represent the high school with a beginning Latin class at the blackboard under the instruction of Prin. Chas. Arnot, now superintendent of Dodge county; another high school class with Miss Eliza Scherzer as teacher; the intermediate department with Miss Jessie R. Inches, teacher; and a grammar department with Miss Nellie G. Golder, teacher. As may be seen by the clocks in the illustrations, these views were taken shortly after roll call in the afternoon, and show the pupils at their regular school work in its every-day routine.

KEARNEY PUBLIC SCHOOLS

The Longfellow school in Kearney was erected in 1892 at a cost of \$40,000. This is the high school building of Kearney and contains thirteen rooms, including assembly room, recitation rooms, laboratories, offices, library and two first primary schoolrooms. It

is modern in construction, with single desks, recitation benches with arms, slate blackboards throughout and a full equipment of apparatus for teaching all the sciences. The Smead system of heating and ventilating is used. There are separate cloak rooms for the boys and girls and toilet rooms in the basement. The lighting is principally from the left, but with high windows in the rear. The halls are wide, with easy stairways. The building is furnished with city water in the halls and laboratories, and lighted with gas and electricity. The Longfellow and Whittier schools are placed in a beautiful park consisting of more than six acres in the heart of the city. This park is seeded with blue grass and clover, and well supplied with shade trees.

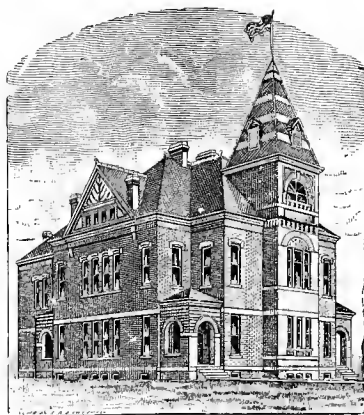
The Alcott and Hawthorne schools, twin buildings, were erected in 1892 at a cost of \$20,000 for the two. Each contains four schoolrooms and houses the first five grades. The rooms are furnished with single desks and provided with slate blackboards. The Smead system of heating and ventilating is in use, and cloak and toilet rooms are provided. In other particulars these two buildings resemble the Longfellow school.

The Whittier school was erected in 1881 at a cost of \$20,000. It contains seven schoolrooms and all grades from the second to the eighth inclusive. It is heated with steam, and the ventilators are in the walls. In interior arrangement it compares quite favorably with the more modern buildings of Kearney.

The Kenwood school was erected in 1888 at a cost of \$10,000. It is a four-room building for the first seven grades. It is heated with hot air, and in other particulars resembles the other buildings of Kearney already described.

ORD HIGH SCHOOL

This building was erected in 1892 at a cost of \$13,500. It contains five graded schoolrooms, one high school assembly room, two recitation rooms, a laboratory and an office. All grades are represented in the building except the first and second. It is seated with both single and double desks, and provided with slate blackboards. It is heated with hot air and ventilated with the Fuller & Warren system. The cloak rooms are the wide halls. The lighting is good.



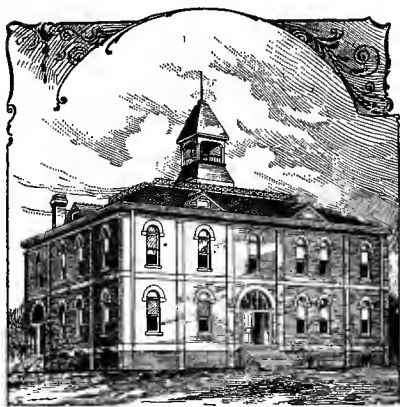
DAVID CITY HIGH SCHOOL



PETERSBURG PUBLIC SCHOOL



FALLS CITY HIGH SCHOOL



GORDON PUBLIC SCHOOL

FREMONT HIGH SCHOOL

This building was erected twelve or thirteen years ago at a cost of \$22,000. It contains one assembly room, six class rooms and two offices. It is used exclusively for high school purposes. The Smead system of heating and ventilating is in use. The furniture is good, the blackboards are of slate, and there are cloak and toilet rooms in the building. When erected it was supposed it would be ample in size for many years to come, but Fremont has already outgrown it.

HARVARD HIGH SCHOOL

The Harvard high school is the best schoolhouse in Clay county. It was erected in 1894 at a cost of \$12,000. It contains eight school-rooms, one laboratory and one office, and houses eleven grades. The blackboards are of the best slate, the desks nearly all single and the apparatus quite modern. The Smead system of heating and ventilating is in use, and there are cloak and toilet rooms. The lighting is excellent, mainly from the left and rear of the pupils. This is said to be one of the best equipped and best kept school buildings in the state.

BEATRICE HIGH SCHOOL

The Central school at Beatrice includes the high school, although it also makes provision for some of the grammar grades. It was erected in 1884 at a cost of \$30,000. There are in it ten school-rooms, three recitation rooms and two laboratories. It is furnished with single seats and provided with slate blackboards. It is heated by steam. All necessary apparatus and supplies for high school purposes and grade work are provided.

CUMING CITY SCHOOL GROUNDS

We wish to direct particular attention to these school grounds, located about three miles northwest of Blair in Washington county. The grounds are 260 feet in width and 270 feet in depth, and when the photograph from which our half-tone was reproduced was taken in the early fall, the trees almost entirely obscured the school-house.

DISTRICT SCHOOL NO. 9, DODGE COUNTY

This is a very common type of school building in the eastern part of Nebraska. It was erected in 1876 at a cost of less than \$1,000. There is an entry way or vestibule used as a cloak room, and the room is lighted from both sides, the east and the west. It is seated with single desks and supplied with slate blackboard, maps, charts and a small library. Notice the tall trees about the building used as a wind-break, but there is no attempt in the way of shrubbery to improve the appearance of the grounds and conceal the outhouses.

AUBURN WARD SCHOOLS

The little city of Auburn, the county seat of Nemaha county, in southeastern Nebraska, has excellent, solid and substantial school buildings.

The Athens school was erected in 1896 at a cost of \$7,000. It is a six-room building for the grades below the high school. Nearly all desks are single ones, the blackboards are made of liquid slating on plaster and charts and maps are provided. The Smead system of heating and ventilation is used. There are cloak rooms, but no interior toilet rooms. The rooms are lighted mainly from the left and rear of the pupils, and the interior of the building in general is quite neat and convenient in arrangement.

The Antioch school is an eight-room building erected at the same time as the Athens school and cost perhaps \$1,000 more. It is quite similar in design, arrangement and furnishing to the Athens school.

CRETE HIGH SCHOOL

This building was erected in 1888 at a cost of \$25,000. It contains one high school assembly room, four recitation rooms, six graded schoolrooms, two offices and three store rooms. All grades above the second are represented here. The building is furnished with single desks, slate blackboard four feet wide in all the rooms except the third and fourth grades, where it is narrower, and the usual amount of high school apparatus, maps and globes. It is heated with steam and well ventilated. The building has easy stairways and good cloak rooms.



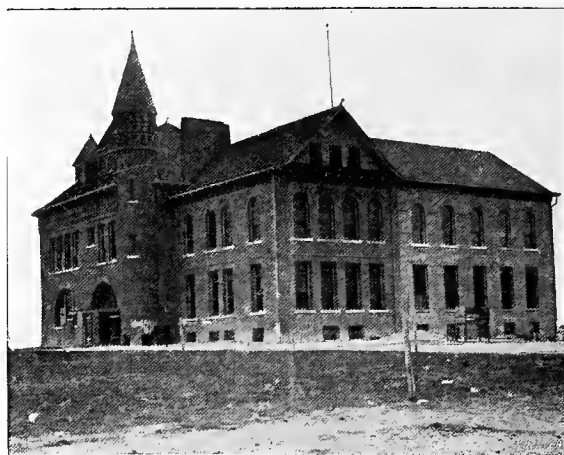
ST. EDWARD PUBLIC SCHOOL



HARTINGTON PUBLIC SCHOOL



ELGIN PUBLIC SCHOOL



ALLIANCE PUBLIC SCHOOL

BEATRICE WARD SCHOOLS

The Fairview school of Beatrice was erected in 1891 at a cost of \$7,500. It is a four-room building for the first seven grades. It is furnished with single desks, slate blackboard, maps, charts, globes, etc., and the Smead system of heating and ventilating is in use, but the interior closets have been removed. There are cloak rooms, and the schoolrooms generally are lighted from the left and rear.

The South school was erected in 1886 at a cost of \$8,000. It contains six rooms for the first seven grades, and is furnished with maps, charts, globes, etc., but the blackboards are of cloth. In other respects it is similar to the Fairview school.

The East school was erected in 1888 at a cost of \$10,000. It contains seven rooms for all the grades below the high school except the seventh. In all essential particulars it resembles the South school.

RED CLOUD HIGH SCHOOL

The Red Cloud high school was erected in 1882 at a cost of \$10,000. It contains an assembly room, recitation room, a library and an office and three graded schoolrooms. All grades above the second are represented in the building. The blackboards are of plaster or of cloth, and the building is heated with stoves. There are chimney flues for the exit of foul air. Some high school apparatus is provided, but the building is without cloak rooms or toilet rooms.

MADISON HIGH SCHOOL

This building was erected two years ago at a cost of \$15,000, including the steam heating plant. It contains a high school assembly room, recitation room, laboratory, library, store room and six grade rooms. It is furnished with single desks, slate blackboard, some laboratory apparatus and a liberal supply of organs, pictures, etc. The building is properly lighted and ventilated.

ASHLAND HIGH SCHOOL

The original part of this building was erected in 1871 and an addition thereto in 1887 at a total cost of \$16,000. It is an eleven-room building and contains all grades. There are both single and double desks and slate blackboard. It is heated with steam and provided with outlets for foul air near the ceiling. There are cloak

rooms but no toilet rooms in the building. The rooms are lighted mainly from the left and rear.

PONCA PUBLIC SCHOOL

This excellent school building in northeastern Nebraska was erected three years ago at a cost of about \$18,000. It contains ten schoolrooms, an office and a library, and has also two large hallways. All grades are here represented. The desks are modern single ones, though some double desks are still in use, and the blackboard is of plaster composition. It is heated with steam and ventilated by means of a fan in the basement. It contains both cloak and toilet rooms. The lighting is from the left of the pupils. In its system of heating, ventilation and lighting, its broad stairways and large, airy, well-lighted hallways, this building compares favorably with any in the state.

COLUMBUS HIGH SCHOOL

The new Columbus high school was erected nearly four years ago at a cost of \$27,000. It contains a high school assembly room, three recitation rooms, three laboratories, an office and a library and three graded schoolrooms. The desks are single, and those in the high school are adjustable with revolving seats. The blackboard is of slate and the apparatus all quite modern. The system of heating and ventilating is similar to the Smead system. The hallways are divided for cloak rooms and there are toilet rooms in the basement. The rooms are in the main lighted from the left or left and rear. The building contains ample hall space, excellent arrangement, abundant light, high ceilings and tinted walls.

WAKEFIELD HIGH SCHOOL

This building was erected three years ago at a cost of \$15,000. It is of pressed brick and contains six schoolrooms, one laboratory and one assembly room, and houses all of the grades from the first through the eleventh. The blackboards are of slate and the furniture and apparatus fairly good. The building is heated with steam and ventilated. There are cloak rooms, but no interior toilet rooms. The schoolrooms are lighted from the left and rear. The building has wide halls, easy stairways and conveniences of interior arrangement.



DISTRICT SCHOOL No. 38, SARPY COUNTY

The last log schoolhouse in eastern Nebraska, removed in 1901



GRAND ISLAND HIGH SCHOOL

HASTINGS HIGH SCHOOL

This building was erected in 1889 at a cost of \$20,000. It contains ten rooms and accommodates all the grades from the first through the twelfth. It is furnished with single desks, recitation chairs, several kinds of blackboard and the ordinary amount of apparatus for instruction in the sciences. The building is heated with steam and provided with cloak and toilet rooms, but there is no complete system of ventilation. The lighting is mainly from the left and rear.

LOUP CITY PUBLIC SCHOOL

This building was erected in 1899 at a cost of \$10,000. It contains six schoolrooms and one recitation room for the accommodation of the ten grades. The furniture is mostly of the old-fashioned folding-desk variety, the blackboards are of hard finish plaster, and the apparatus includes wall maps, charts, etc. The building is heated with steam and ventilated. There are open cloak rooms in the hallways, but there are no toilet rooms in the building. One-half of the rooms are lighted from the left and rear, the other half from the right and rear of the pupils.

MINDEN HIGH SCHOOL

This building was erected three years ago. It contains an assembly room, four recitation rooms, two laboratories and three graded schoolrooms, the latter for the accommodation of the fourth, fifth and sixth grades. It contains good furniture and apparatus and slate blackboard, and the building is heated with steam, but is not ventilated. There are cloak rooms but no toilet rooms in the building. The rooms generally are lighted from the left and rear.

GRANT SCHOOL, NORFOLK

The main part of this building was erected in 1886 and an annex in 1898 at a total cost of \$13,000. There are six schoolrooms and one office, the former for the accommodation of the primary and the fifth grades. There are both single and double desks in the building, natural slate and plaster composition blackboards and some apparatus. The building is heated with hot air and ventilated. There are cloak rooms in the building but no toilet rooms. In general, the rooms are lighted from the left and rear. The rooms are all large and well lighted, but in the older portion they are poorly ventilated and not very well heated.

NORFOLK HIGH SCHOOL

This building was erected in 1890 at a cost of \$29,000. It contains an assembly room, three laboratory and recitation rooms, three office and library rooms and six schoolrooms. The desks are single, the blackboards of plaster composition and the apparatus and equipment very good. The building is heated with hot air by the Smead system and ventilated. It contains both cloak and toilet rooms. The schoolrooms are lighted chiefly from the left and rear. The building contains commodious hallways, stairways, good ventilation, but not the best of heating. The general arrangements are quite convenient.

AUBURN HIGH SCHOOL

This building was erected in 1886 at a cost of \$8,000. It is used exclusively for the high school grades and contains two assembly rooms, a class room, laboratory, office and book room. It is provided with single seats, liquid slating blackboards, maps and charts and apparatus for physics and chemistry. The Smead system of hot air is used for heating with ventilation. There are cloak rooms but no toilet rooms in the building. The rooms are lighted mainly from the left and rear. It is a neat and convenient building in all respects.

ST. EDWARD PUBLIC SCHOOL

This building was erected in 1895 at a cost of \$5,600. It contains four good schoolrooms for the accommodation of all the grades. The desks are mainly the old folding ones, though single, the blackboards are of slate and the apparatus insufficient. The building is heated with stoves, and ventilated by means of windows, transoms and doors. There are cloak rooms but no interior toilet rooms. All the rooms are lighted from the left and rear.

HARTINGTON PUBLIC SCHOOL

This building was erected in 1896 at a cost of \$12,000. It contains one laboratory and seven schoolrooms for the accommodation of all the grades from the first through the twelfth. The blackboards are of slate, and the building is heated with steam and ventilated. There are cloak rooms but no interior toilet rooms. The rooms are lighted from the left and rear.



DISTRICT SCHOOL No. 54, PERKINS COUNTY
Front View



DISTRICT SCHOOL No. 54, PERKINS COUNTY
Side View



SOD SCHOOLHOUSE, DUNDY COUNTY



ELGIN PUBLIC SCHOOL

This building was erected in 1891 at a cost of \$3,500. It is not in good repair and is difficult to heat and ventilate, but Elgin expects to erect a new school building soon.

ALLIANCE HIGH SCHOOL

The older part of this building was erected in 1889 and an addition in 1899 at a total cost of \$15,000. It contains nineteen rooms for the accommodation of all the grades from the first through the twelfth, including schoolrooms, recitation rooms, offices, laboratories, library, boiler room and lunch room. Natural slate and hyloplate blackboards are in use. The building is heated with steam and ventilated. There are cloak rooms, but the toilet rooms are outside.

LOG SCHOOLHOUSE IN DISTRICT NO. 38, SARPY COUNTY

This schoolhouse was demolished last year and its logs have been used during the past winter to heat the new frame building that has taken its place. This was probably the last log schoolhouse in the eastern part of Nebraska. It stood in a beautiful grove on Bellevue Island, only twelve miles from the business center of Omaha. The building was erected about thirty years ago and was used during the last sixteen years of its existence as a schoolhouse. It measured only sixteen by eighteen feet, with a six-foot ceiling. It contained twenty double desks and was lighted by means of three windows. An old-fashioned wood-burning stove, red with rust, furnished the heat, and the chinks between the logs where the plaster had fallen off provided plenty of ventilation. It has long been a question whether part of the land comprising school district No. 38 of Sarpy county was in Iowa or Nebraska, and on account of this uncertainty it was difficult to vote bonds for a new schoolhouse, but finally \$800 was raised in this way, and the same has been used in the construction of the new frame building.

GRAND ISLAND HIGH SCHOOL

The original part of this building, known as the Dodge building, was erected in 1878 at a cost of \$30,000; an addition in 1885 cost \$9,000, and another addition in 1889, \$11,000. The complete build-

ing contains twenty-one rooms, including all necessary schoolrooms and recitation rooms for the accommodation of all grades from the first through the twelfth. It contains both kinds of desks and slate blackboards. The apparatus is of the best, and there is a very complete reference library for the benefit of the high school. The building is properly heated with steam, but is not ventilated. There are cloak rooms in the building, but no toilet rooms. The schoolrooms are lighted mainly from the left and rear.

DISTRICT SCHOOL NO. 54, PERKINS COUNTY

This old sod schoolhouse which the author had the pleasure of examining last summer was erected about the year 1888 at a cost approximately of \$100. It contains two rooms, only one of which is habitable. There are in the building good double desks, a recitation bench, slate blackboards, and fully \$200 worth of apparatus, including maps, charts and arithmetical blocks in abundance. There is one stove, with accidental and incidental ventilation, assisted by the cattle. The building does not belong to the district, but was borrowed by it for school purposes with the understanding that the district was to keep it in repair for the use of it without rent. A new schoolhouse has been or soon will be erected in the district. The side view shows a shed where the teacher and some of the pupils stable their horses during the school day.

SOD SCHOOLHOUSE, DUNDY COUNTY

This is the picture of a sod schoolhouse formerly used in district No. 9 of Dundy county, but it was replaced about three years ago by a nice frame building. The photograph was taken seven or eight years ago. The building was erected in 1888 at a cost of about \$125. The furniture it contained was all home-made except the teacher's chair. It was furnished with a bit of slate blackboard which cost forty cents per square foot. The pupils face the door, with two windows on each side and no opening in the rear. The building was, naturally enough, warm in the winter time and cool in the summer. It was almost impossible to hear any noise from the outside. It was plastered with native lime (soft magnesia rock) which pulverizes easily after being soaked in water a few days. No studding or lath were used, as the plaster sticks readily to the sod



DISTRICT SCHOOL No. 30, HITCHCOCK COUNTY



DISTRICT SCHOOL No. 73, FRONTIER COUNTY



DISTRICT SCHOOL No. 44, KEITH COUNTY



THE LOOKOUT SCHOOL, DISTRICT No. 26, LOUP COUNTY

walls. The greater portion of the plastering was done during intermissions by the pupils, who were thus receiving their first lessons in clay modeling.

DISTRICT SCHOOL NO. 83, CHERRY COUNTY

This sod schoolhouse was erected in the fall of 1901 at a cost to the district of \$37.85, as the work and a part of the material were contributed by the patrons. The actual cost of such a building would be about \$100. The furniture it contains is entirely homemade, the blackboards are painted boards, there is no apparatus, and the schoolhouse is heated with a stove and "native fuel." The district has never had to exceed six months of school during a year, and last year, on account of their inability to secure a teacher in time, they were unable to have more than three months.

DISTRICT SCHOOL NO. 30, HITCHCOCK COUNTY

This school district has been discontinued, and the building is now used as a church and is known as "The Old Sod Church."

DISTRICT SCHOOL NO. 73, FRONTIER COUNTY

This building was erected about twelve years ago at a cost of \$100. It was replaced last year by a good frame schoolhouse. It was a long, low building, devoid of beauty, though not uncomfortable, and is a type of many of the schoolhouses that existed in western Nebraska several years ago, but it is not characteristic of the more modern schoolhouses now in that part of the state. It contained patent furniture, the blackboards were of matched lumber painted black, and there were windows on both sides opposite each other. The children in the illustration are typical young Nebraskans that are determined to maintain for their state the lowest percentage of illiteracy in the Union, whether in order to do so they must acquire their education in a sod house, a log house or a pressed brick building.

DISTRICT SCHOOL NO. 44, KEITH COUNTY

This view shows the south side of a sod schoolhouse with shingled roof. Like most of the sod houses, the ceiling is low. The room contains patent desks and about two square yards of slate black-

board. There is an old reading chart and a small dictionary in the school. There are two windows on each side; the north and the south, and a door in the east. The illustration shows some broken window glass.

LOOKOUT SCHOOL, LOUP COUNTY

This sod house is located in district No. 26, in a county without a mile of railroad. A wooden blackboard is exhibited to the left of the children. The low roof and lower door may be seen in the illustration, and the bright looking children are typical of the prairies and ranges of central and western Nebraska.

DISTRICT SCHOOL NO. 1, HALL COUNTY

This school district is almost unique in Nebraska in that in addition to a fine brick schoolhouse with porches and architectural ornamentation (see illustration) it provides a residence and garden for the use of the teacher.

The first school ever established in Hall county was a private school in 1864, with only four children attending: Frederick Stolley, Wilhelm Stelk, Christian Götsche and Lina Schoel. The teacher, Theodore Nagel, received his pay in work performed by the parents of the children on the teacher's farm while he was teaching the children. Christian Götsche, when sixteen years old, was killed by the Indians while out hunting on the Loup river.

An attempt at organizing a school district under the laws of the state was first made in the year 1868. The district embraced all the territory of the present school districts Nos. 1 and 74, and considerable of the Grand Island school district, No. 2. All measures taken at that time were irregular and bungling and subsequently proved to be illegal, and much contention prevailed for several years on account of the high-handed and unlawful proceedings of those who claimed to be in authority. The party acting for the time being as director was also the teacher of the district school, and reports on one of the sheets of his record that, in the capacity of director, he inspected his own school three times that year. Taxes for school purposes were levied in the following manner, as for example:

1. Every voter in the school district shall pay \$2.00 into the school fund.



DISTRICT SCHOOL, No. 1, HALL COUNTY



TEACHER'S RESIDENCE, PROPERTY OF DISTRICT No. 1, HALL COUNTY



DISTRICT SCHOOL No. 3, FILLMORE COUNTY
This building was destroyed to make room for—



The New School Building in
DISTRICT No. 3, FILLMORE COUNTY

2. On every forty acres of land claimed or owned by any settler, he shall pay \$1.50 into the school fund.

3. On every \$100 assessed valuation of personal property, one-fourth per cent shall be paid.

A schoolhouse of the value of \$250 (14 x 18 feet) was built, but the teacher received very little cash and had to take school orders for his pay and sell them at a discount. Matters changed somewhat in the summer of 1870, when a second schoolhouse was built and the district was divided into two sub-districts, "west" and "east." It was not, however, until April, 1872, when Wm. Stolley was elected director of district No. 1, that radical changes took place. At that time two teachers were employed for nine months each at \$40 per month. Gradually matters improved, and in the years 1884, 1885 and 1886 school district taxes were levied for the purpose of building two substantial brick schoolhouses, one for each sub-district. This plan was carried out, and on September 1, 1886, both brick schoolhouses, as they are now in evidence, were accepted by the school board at a cost of \$4,515.07. Soon after this, school district No. 1 was divided into two districts: the west end sub-district to be known as district No. 1, and the east end sub-district as district No. 74 (see illustration of this schoolhouse).

At the annual school meeting in 1893, the sum of \$1,200 was voted for the building of a teacher's residence and suitable out-buildings, and a tax of ten mills was levied for that purpose. In August, 1893, an additional acre of land adjoining the schoolhouse grounds on the east was bought for the location of the teacher's "home," and although much opposed by some tax payers, on the 15th day of May, 1894, the contract for the construction of the teacher's residence was let for the sum of \$1,000 in gold. The house was completed and turned over to the district on July 19, 1894. The teacher's house is 22 x 28 feet and 14 feet in height, with an addition to the west of 12 x 16 feet and 10 feet high. The house has double windows for winter and window screens for summer.

Up to the year 1880 inclusive the district paid the teacher \$40 per month; in 1881 they paid \$45 per month (9 months); in 1882, \$50 per month (9 months); in 1883, \$55 per month (9 months); and for the years 1884 to 1901 inclusive, the district paid \$60 per month (9 months), and of late years provided the free use of the teach-

er's residence, out-buildings, and one-half acre of ground for a garden. The district also voted funds for the additional purchase of suitable pasture land for the keeping of a milch cow and family horse; but so far the school board has not taken any action on this last departure.

For much of this information the state superintendent is indebted to Mr. Wm. Stolley, director.

DISTRICT SCHOOL NO. 3, FILLMORE COUNTY

Until the summer of 1901 this school district used a frame building which was as good as the average in many parts of Nebraska and better than the average in some places. At that time, however, the frame house was torn down and much of its material was utilized in the construction of a new and vastly better school building, made of brick. The old and the new buildings are both illustrated on the same page. The new building cost about \$1,200, and instead of issuing bonds, a building fund was levied beginning two years before. The district thought it better to provide the necessary funds during the two years previous to the construction of the schoolhouse rather than during the five or ten years following its completion. They saved interest and some trouble.

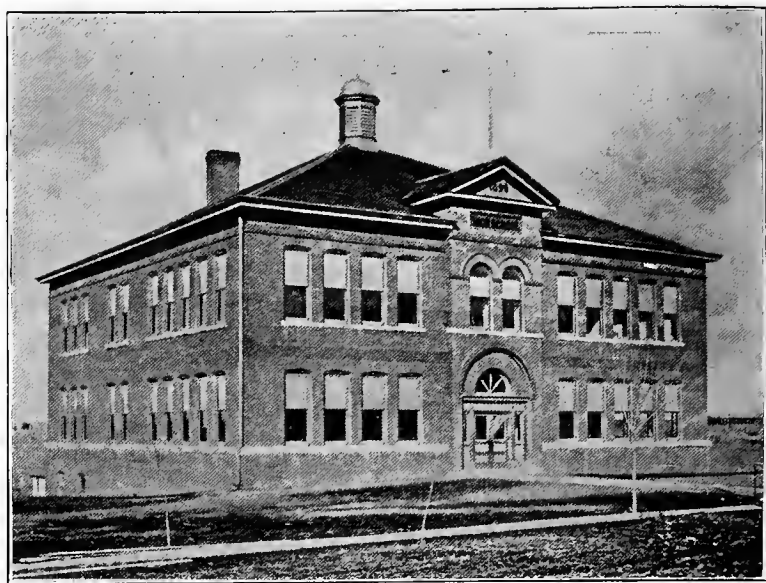
This new schoolhouse is the best one in Fillmore county, and is probably the only one that is scientifically lighted and correctly ventilated. The pupils face an unbroken east wall, with a natural slate blackboard extending from corner to corner. The windows in the west wall, the rear of the room, are set high enough to provide another blackboard the entire length of that end of the room. The public road runs past the west end of the building, but the windows are so high that the school is not disturbed by passing teams, for the pupils cannot see out even if they should be standing. Along the north side of the building are four long windows reaching to the cornice above, and these with the high windows in the west wall furnish enough light even on the darkest days. This north wall with windows is not shown in the illustration. The vestibule leads into the schoolroom and into the cloak room. In the wall between the schoolroom and the cloak room is fitted a bookcase on the schoolroom side and shelves for dinner pails on the cloak room side. The schoolroom proper is 34 x 24 feet with a 12-foot ceiling. The cloak room is 16 x 7 feet, and the vestibule is



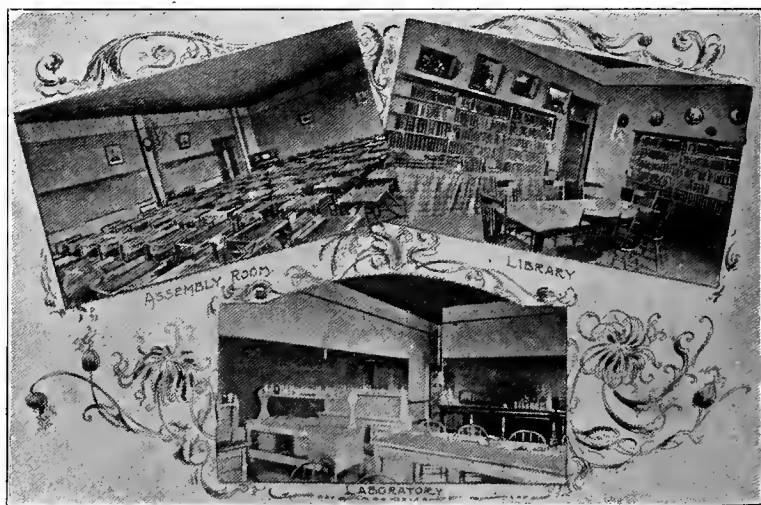
TABLE ROCK PUBLIC SCHOOL, PAST, AND—



TABLE ROCK PUBLIC SCHOOL,
Dedicated January 10, 1902



PAWNEE CITY HIGH SCHOOL



PAWNEE CITY HIGH SCHOOL
Interior Views

eight feet square. The furniture from the old building is at present used in the new one, but soon will be replaced by new desks. The blackboards are of natural slate, and anatomical and geographical charts are provided. A stove is used for heating, and this will soon be provided with a jacket. Fresh air is admitted from the outside by means of a duct leading in under the stove. The children, of course, face the east wall and receive the light mainly from the left and partly from the rear. The floor is "dead," resting on a layer of mortar several inches thick, which makes it as solid as a wall. The author had the pleasure of visiting the school in this building last fall, and he thinks it compares favorably with the model rural schoolhouse illustrated in the frontispiece. The Fillmore county building possesses one advantage in being built of brick. Its architect is Mr. T. J. Beals, of Geneva.

TABLE ROCK PUBLIC SCHOOL

Until January 10, 1902, the village of Table Rock used as a schoolhouse one of the most barn-like structures in the state, but since that date the children in that school district have been housed in one of the neatest, handsomest, most substantial, most convenient and commodious school buildings in any village the size of Table Rock anywhere in the state of Nebraska. The new schoolhouse is built of the finest home-made vitrified brick, with blue flint stone trimmings, also home-grown, and well finished woodwork. All the equipment and the furniture are quite modern. The building complete cost about \$12,000. It contains an office, a laboratory, a recitation room and seven schoolrooms, all well arranged and correctly lighted. The natural slate blackboard is three feet in width in the upper rooms and four feet wide below. The building is heated with steam. There are cloak rooms, but no interior toilet rooms. Table Rock "celebrated" on the occasion of the dedication of its new school building, and Superintendent Wimberley's little girl recited an original poem concluding as follows:

"So farewell to the old schoolhouse; we are told

We must bid it a sad adieu.

Each girl and each boy will hail with great joy

A welcoming into the new."

PAWNEE CITY HIGH SCHOOL

This new high school building was erected in 1899 at a cost of \$13,000. It contains an assembly room, two recitation rooms, library, laboratory, office, store room and four schoolrooms for the grammar grades. The blackboards are painted upon the cement plaster. The building is heated with steam and ventilated by means of shafts heated by steam coils. There is a cloak room in connection with each schoolroom, but no interior toilet rooms. The rooms are lighted from the left and rear. The building is a plain but a solid and substantial one, conveniently arranged. The walls are tinted a shade of green.

LINCOLN HIGH SCHOOL

The old Lincoln high school or central building, now known as Science Hall, was built in 1872 at a cost of about \$50,000. The building contains nearly twenty rooms, including laboratories and recitation rooms. These are seated mostly with tables and chairs and school desks of various makes. The blackboards are of plaster. The building is heated with steam and not properly ventilated. It is poorly adapted to present needs.

The new Lincoln high school building, known as Administration Building, was erected in 1897 at a cost of \$25,000. It contains twenty-two rooms for various purposes. Here, also, plaster blackboards are in use, and the building is heated by steam and ventilated by the gravity system. There are ventilating flues with heated coils inserted to create an upward draft. The building contains a large assembly room for the accommodation of the entire Lincoln high school.

SYRACUSE PUBLIC SCHOOL

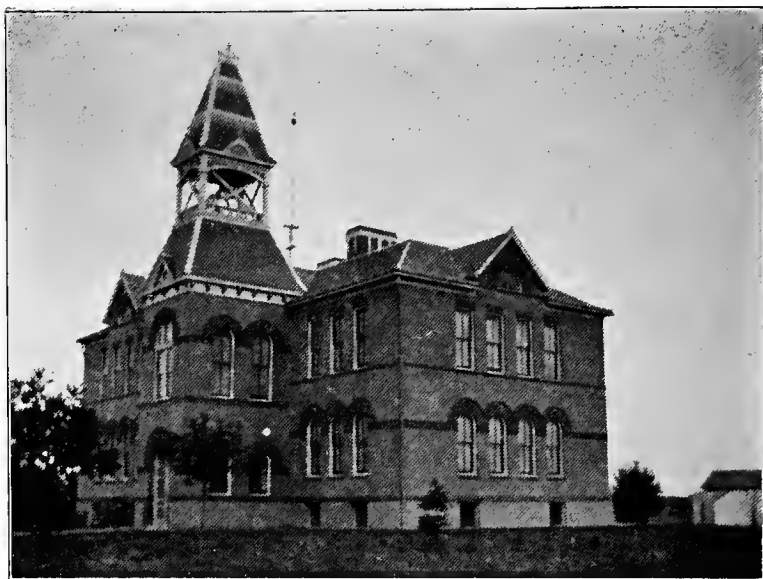
This brick building was erected in 1890 at a cost of \$10,000. It contains an assembly room, laboratory, recitation room, two store rooms and five schoolrooms for the accommodation of all the grades from the first through the eleventh. It is seated with single desks and furnished with slate blackboards and good apparatus. It is heated with steam and inadequately ventilated by means of cold air shafts and dead air flues. There is a cloak room in connection with each schoolroom, but no interior toilet rooms. The rooms are well



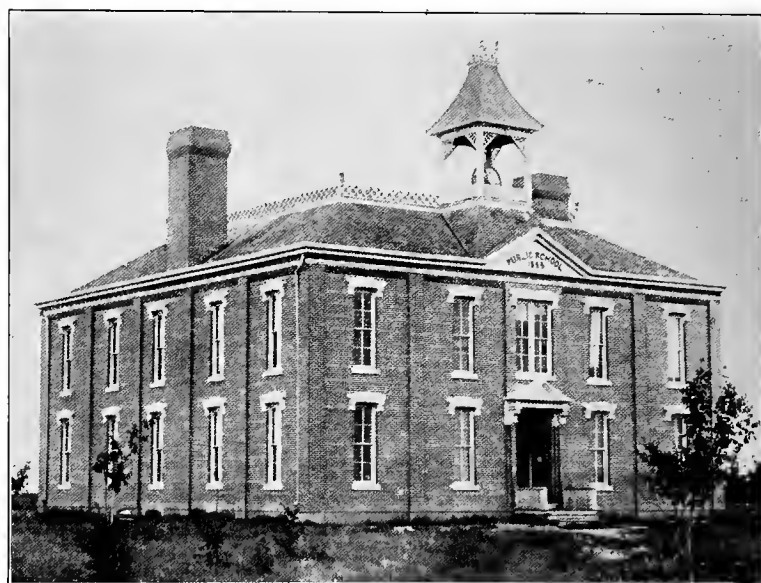
LINCOLN HIGH SCHOOL, (OLD)
(Now Science Hall)



LINCOLN HIGH SCHOOL,



SYRACUSE PUBLIC SCHOOL



AINSWORTH PUBLIC SCHOOL.

lighted, mainly from the left and rear. The building resembles the one at Sterling.

AINSWORTH PUBLIC SCHOOL

This building was constructed in 1895 of common brick at a cost of \$10,000. It contains a large high school room, a laboratory, a library and five schoolrooms for the accommodation of all the grades from the first through the eleventh. The desks are nearly all old ones. The blackboards are partly of natural slate and partly of felt. The building is heated by hot air, with some ventilation.

BRADY PUBLIC SCHOOL

This two-room frame building was erected in 1893 at a cost of \$2,000. There is a primary room located elsewhere in the village. The rooms are heated by means of stoves and lighted from both sides. Many of the pupils come from the country and several from other districts. The illustration shows the pupils as they are about to start for their homes in conveyances of different kinds, just after four o'clock.

PRAIRIE QUEEN SCHOOL, SARPY COUNTY

This schoolhouse in district No. 33 of Sarpy county was erected about 1884 at a cost of \$1,000. It is a little better than the average rural schoolhouse in Sarpy county and eastern Nebraska. It is furnished with patent desks, slate blackboards, globe, dictionary, charts, etc.

PAPILLION PUBLIC SCHOOL

This is one of the best school buildings in Sarpy county. It was erected in 1892 at a cost of \$20,000. It contains six schoolrooms, a laboratory, a library, play rooms, etc., for the eleven grades. It is seated with both single and double desks, furnished with slate blackboards, physical apparatus, maps, etc. It is heated and ventilated by means of the Smead hot-air system. There are cloak rooms, and also toilet rooms in the basement. The rooms are lighted mainly from the left and rear. The building is constructed of pressed brick, with wide hallways and stairways, and hard-wood floors.

GRETNA PUBLIC SCHOOL

This building was erected in 1898 at a cost of nearly \$8,000. It contains four schoolrooms and two or three smaller rooms. It is furnished with single desks and slate blackboards, maps and globes. It is heated with steam and well ventilated. There are cloak rooms, but no interior toilet rooms. Two of the schoolrooms are lighted from the left and rear and the other two from the right and rear. The building is faced with the very best buff pressed brick. The grounds are 255 x 382 feet, and they have 1,000 linear feet of brick pavement, four, six and eight feet in width.

LONG PINE PUBLIC SCHOOL

This building was erected in 1888 at a cost of \$4,000. It contains four schoolrooms and two recitation rooms for the use of the eleven grades. The blackboards are of hyloplate. The building is heated with stoves but not ventilated except as shown in the illustration.

CRAWFORD PUBLIC SCHOOL

This building was erected in 1891 at a cost of \$20,000. It is situated on a high hill overlooking the village of Crawford, in north-western Nebraska. It contains seven schoolrooms, a recitation room, library, laboratory, and some rooms in the basement where the children may play and eat their lunches, and also rooms in which the janitor and his wife live. The furniture is good, the blackboards of liquid slating and the apparatus fair. The building is heated with steam and ventilated. There are cloak rooms but no interior toilet rooms.

WEEPING WATER PUBLIC SCHOOL

This building was erected in 1890 except the third story, which was added in 1899. The building cost \$15,000. It contains ten rooms for the accommodation of all the grades. It is furnished with double desks and hyloplate blackboard, and is fairly well equipped with apparatus for the laboratories. It is heated with steam and ventilated. It contains cloak rooms but no interior toilet rooms. The schoolrooms are lighted mainly from the left and rear.



BRADY PUBLIC SCHOOL AT FOUR O'CLOCK



GENEVA HIGH SCHOOL



PRAIRIE QUEEN SCHOOL, DISTRICT No. 33, SARPY COUNTY.



PAPILLION PUBLIC SCHOOL

OLD SOD SCHOOLHOUSE IN SOUTHWESTERN NEBRASKA

The photograph from which this illustration is made was taken several years ago. The building is located north of McCook, and was probably intended for other than school purposes. The photograph was presented to Mrs. Nettleton while she was county superintendent there, and is highly prized. Notice the bright faces and tidy appearance of the children, and also the weeds and sunflower stalks that have grown on the sod roof of the schoolhouse.

DISTRICT SCHOOL NO. 16, KEITH COUNTY

This old sod schoolhouse was constructed in the fall of 1886, and torn down some time ago. It contained patent desks and slate blackboards, and was well supplied with modern apparatus. It was lighted by means of two windows in each side.

RURAL DISTRICT SCHOOL, LINCOLN COUNTY

This old stone schoolhouse was destroyed several years ago on account of a change of site, and a frame building was constructed on the new schoolhouse site, but the illustration will serve to show one of the types of schoolhouses in Nebraska, though there are few of this class. The material of the building is native limestone, taken from the hills south of North Platte. As the rocks are soft, to save time and trouble in cutting them the usual method is to make a concrete, and after the wall is built, plaster it on the outside and mark off squares in imitation of marble or granite blocks.

DISTRICT SCHOOL NO. 41, DAWES COUNTY

This log schoolhouse was constructed in 1888 at a cost of \$50. It is made of hewn logs with sod roof. There are two windows in each side. The desks are home-made, the blackboards are painted boards and the building also contains one set of charts and a wood stove.

A BALED STRAW SCHOOLHOUSE

Some five or six years ago in district No. 5 of Scott's Bluff county there was erected a temple of learning, the walls of which were of baled straw, the floor was the primitive mother earth and the roof above presented a face of earth to the heavens. This roof was made of poles laid across from side to side and covered with sod. The building was sixteen feet long, twelve feet wide, and

seven feet high. There was a window in each side and a door in one end. The bales of straw were laid in mud instead of mortar, and with some half bales the joints were broken the same way that bricks are laid. The school board at that time consisted of Mr. James Baxter, Mr. W. S. Fleming and Mrs. Fulton, all of Minatare. The gentlemen performed most of the labor of construction. The building was used but two years as a schoolhouse. The state superintendent has endeavored to obtain a photograph of the building but he cannot find that one was ever taken. Like the temple of ancient Jerusalem, of that schoolhouse there is not left one stone (or bale of straw) upon another, as the cattle were allowed to range around it. A frame schoolhouse now occupies the site. We are indebted to Mr. James Baxter of Minatare and to Mr. A. E. Whiteis of Gering for much of this information.



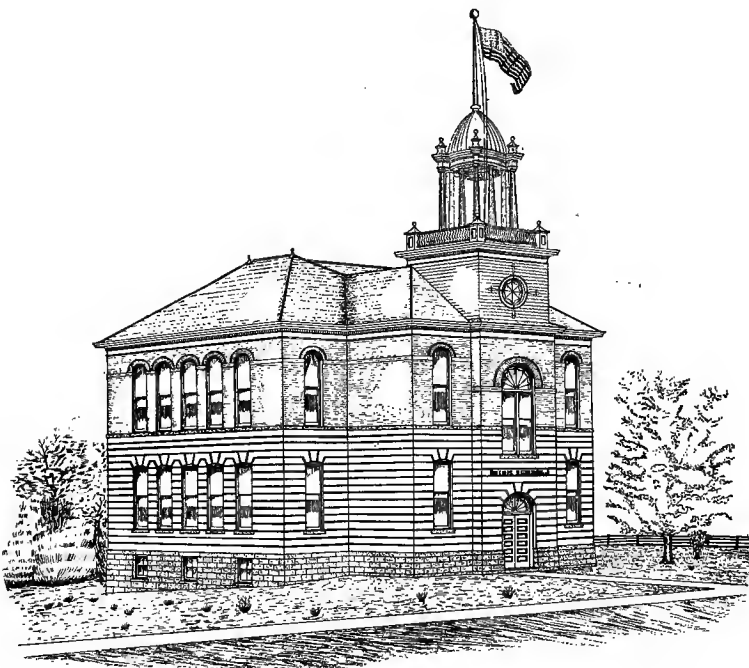
GRETNA PUBLIC SCHOOL



LONG PINE PUBLIC SCHOOL



MODEL ONE-ROOM SCHOOL
American School Board Journal, June, 1901



MIDDLESEX, N. Y., PUBLIC SCHOOL
American School Board Journal, October, 1901

Extracts from an Address

BY DR. W. T. HARRIS, U. S. COMMISSIONER OF EDUCATION, WASHINGTON, D. C., ON "THE DANGER OF USING BIOLOGICAL ANALOGIES IN REASONING ON EDUCATIONAL SUBJECTS," DELIVERED AT THE ANNUAL MEETING OF THE DEPARTMENT OF SUPERINTENDENCE OF THE N. E. A., AT CHICAGO, FEBRUARY 26, 1902.

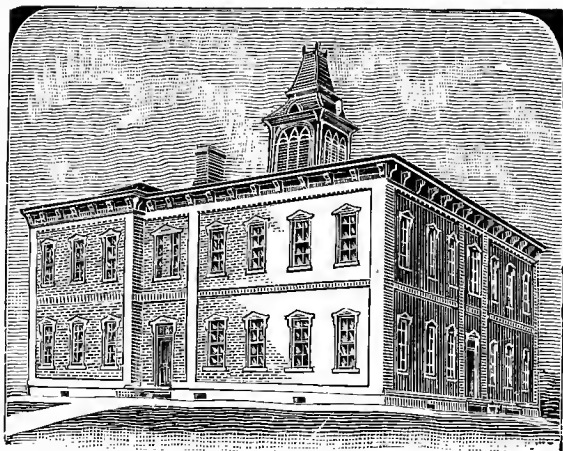
The schoolhouse, at first, was only a slight modification on the dwelling-house. There was light and ventilation sufficient for two, three or four persons in the room. The dark parts of the room were light enough for many purposes of housework, and if one wished to read or to sew or perform the work of cleansing or separating such articles of food as had been ground and needed sifting, or as were composed of small grains or kernels and needed picking over, a seat near the window secured the requisite light.

But the school needed a room lighted in all parts, as nearly equal as possible and with a constant supply of fresh air, heated properly. It was gradually discovered that the room of the dwelling-house was poorly adapted for school purposes. Some pupils got too little light and became near-sighted by holding their books too close to their eyes; some came to have weak eyes by having too much light. For the glare of a page, on which the sunlight falls is sufficient to produce partial blindness. Even pure skylight, without the direct rays of the sun, will tend to do this. Many have been the so-called improvements which in correcting the evil of insufficient light ignored entirely the great injury done to those pupils who sat in the full glare of the sun or of the clear sky, and for hours each day tried their eyes on perceiving letters and figures in small print. I need not speak here of the various attempts to light the room from the front of the pupil, forcing him to strain his eyes in order to make out the words of the page when seen in the direction of the source of light; the experiment of lighting from two sides, the left and the right sides with its attendant impossibility of getting the light upon the book from either side without at the same time facing the light of the other side. The light was tried from the right side alone, and the pupil had to have the shadow of his hand on the place where he was writing. Light from

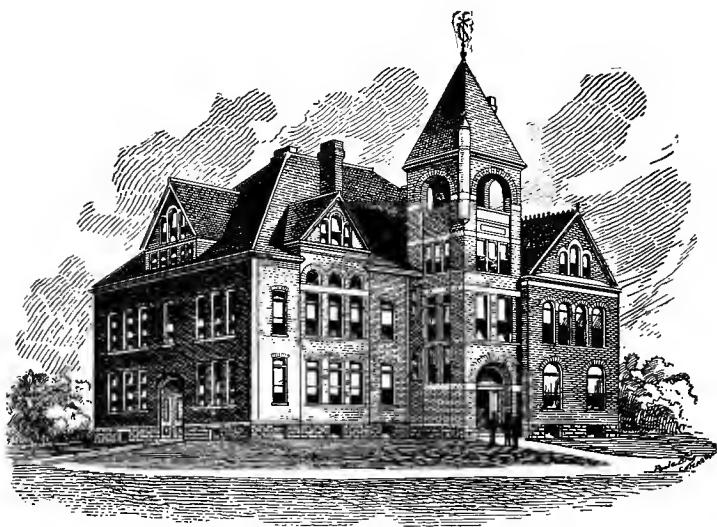
the left and rear came at last to be adopted with much unanimity by educational experts in this country in 1876. But the tendency to make large buildings has since that time permitted and encouraged the construction of schoolhouses with one-half of the rooms lighted from one side only; this, too, without due consideration of the relation between the height of the tops of the windows and the width of the room. The consequence of this is that most of our cities have schoolrooms in which there is a row of desks where pupils sit in a twilight and acquire the habit of holding their books too near the eyes; and another row of desks where the pupils have the glare of light that I have described, and the effort of nature to adjust the retina to the overplus of light dims the power of vision below the normal standard.

In the schoolroom of a building altered over from a dwelling-house, there is also another attendant evil. The pupils in a row of seats placed directly under the windows are exposed, in cold weather, to chilling currents of air which are constantly flowing down the sides of the wall and especially down the window surface. Children not of robust constitution often lay the foundation of much bodily disease in this way. Improper lighting, by reason of the sympathy of the eyes with the stomach, produces in pupils of delicate constitution a tendency to nervous dyspepsia. Indeed, the errors in lighting and in avoiding draughts of cold air seem to me so serious that I cannot listen patiently to those who praise the countless devices which are invented for one and another trifling advantage in the hygiene of the schoolroom. For it were better that they had not been discovered than to distract, as they do, the attention from the far weightier matters of light and temperature and ventilation.

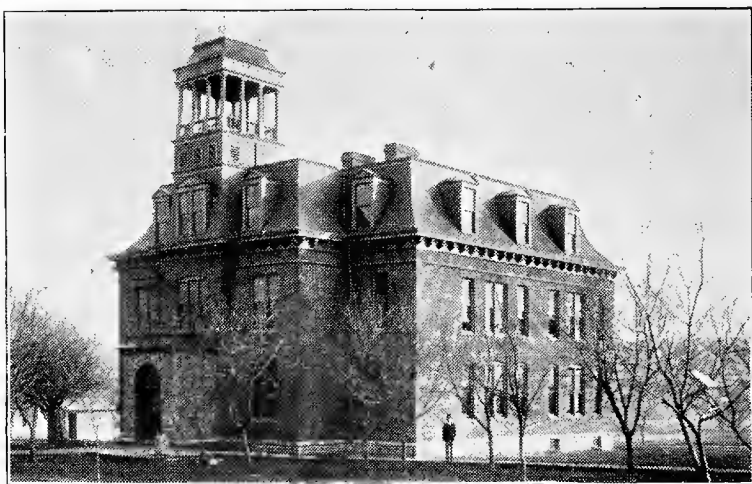
One idea crowds out another in some cases, although in other cases one idea leads to or brings in another. The general idea suggests its applications. But the particular idea having small scope may get in the way of more fruitful ideas. We have to measure ideas as to their relative value and decide for ourselves which may properly give way to the other. For example, take the unhygienic school as it existed and now exists in the countries that are backward in this matter of school architecture, and we must admit that the great purposes of the school were secured and are secured in the log schoolhouses, in the dark, ill-ventilated tenement building



HUMBOLDT PUBLIC SCHOOL



CRAWFORD PUBLIC SCHOOL



WEeping WATER PUBLIC SCHOOL

rented for a school in a slum district, or in a mere shanty school in the west of Ireland. The great purpose of learning to know printed language, to become eye-minded instead of ear-minded—to gain besides one's colloquial vocabulary also a vocabulary of science and literature and philosophy—to become able to understand and use technical language—all these things came then and come now to the gifted youth without the improvements in hygiene that we clamor for. Abraham Lincoln read by the fire-light of the blazing hearth and fed his mighty mind.

It is true that the average of life in those unhygienic days was far less than now. But the illiterate savage does not reach a life average so great as the unhygienic but civilized man, and what is more to the point, fifty years of Europe is worth a cycle of Cathay. A rational life, growing in the production of science and art and literature, and in diffusing the blessing of civilization, is better than a savage life, even if the latter were to have an average of eighty years, while the former were to have an average of thirty years. According to the merely biologic point of view, life is life whether of plant or animal or man, and the more of it the better. But such is not the spiritual point of view.

A Proposed School Law

AN ACT PROVIDING FOR THE HEATING, LIGHTING AND VENTILATING
OF PUBLIC SCHOOLHOUSES, AND FIXING PENALTIES FOR A
VIOLATION OF THE PROVISIONS THEREOF

Be it enacted by the Legislature of the State of Nebraska:

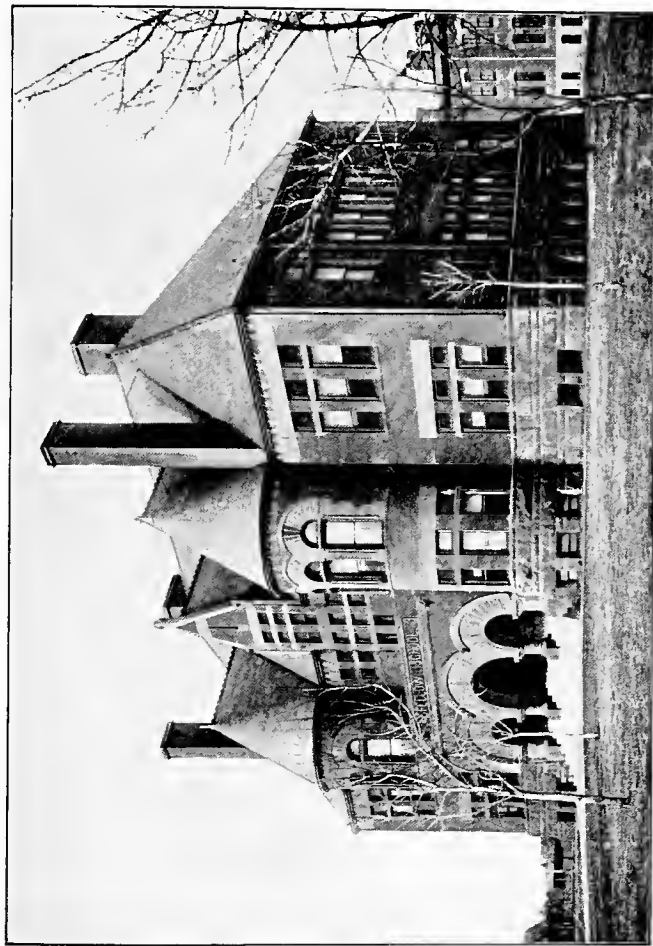
SECTION 1. It shall hereafter be unlawful in the state of Nebraska to let any contract for, or to construct any public schoolhouse, or school building, or to reconstruct or remodel any old schoolhouse or other building, to be thereafter used for school purposes, the lighting, heating and ventilating of which is not in full accord with the provisions of this act.

SEC. 2. All public school buildings, hereafter constructed or remodeled for school purposes, must be lighted by windows placed in the rear and side wall or walls of each class and study room, and such windows shall contain glass surface of not less than one-fifth of the floor space of each room; and all desks and seats shall be so arranged that the windows shall be on the left and in the rear, so far as possible, of the pupils.

SEC. 3. All class and study rooms shall contain not less than fifteen feet of floor space and not less than one hundred and eighty feet of air space for each pupil.

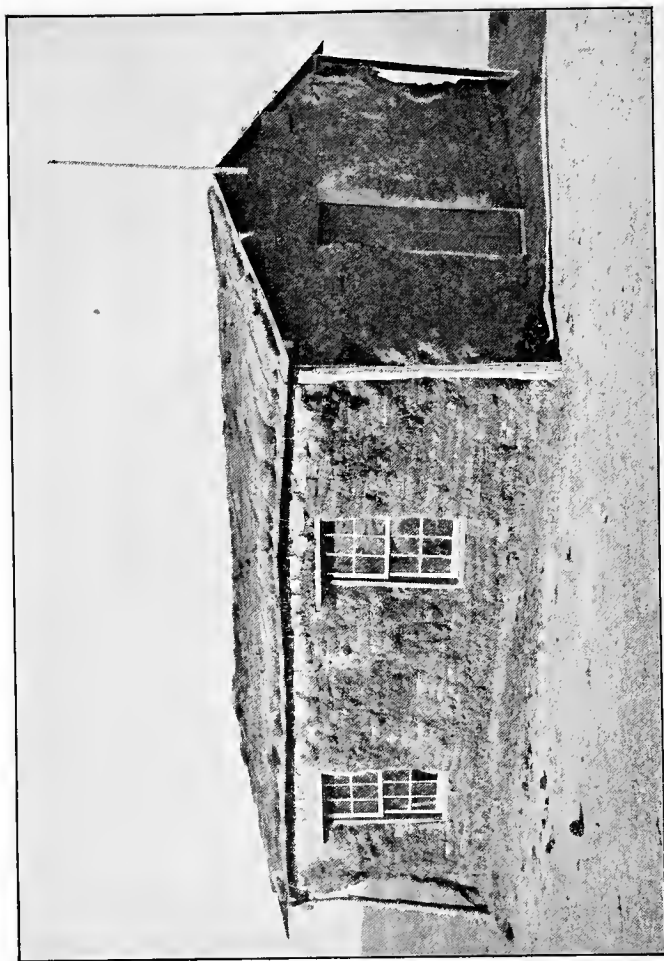
SEC. 4. All public schoolhouses or school buildings of four or more rooms each, which shall hereafter be constructed or remodeled for school purposes, must be provided with such heating and ventilating apparatus as will facilitate the introduction of warm air, when occasion requires, into each class or study room, not less than eight feet above the floor line, with provision for the exit of impure air at the floor line; and the whole shall be so arranged that the required temperature can be maintained throughout each room and the air changed in each room (measured at the exit opening) at least six times in each hour without lowering the temperature or creating a noticeable draft at or below the breathing line.

SEC. 5. All closets and urinals must be so constructed as to provide for the separation of the pupils using the same. They must also be provided with vent flues, so arranged that all foul odors and air will be carried out below the breathing line.



A MODERN HIGH-SCHOOL BUILDING

FROM THE RAND-MCNALLY GRAMMAR SCHOOL GEOGRAPHY
(Used with Permission of the Publishers)



A SOD SCHOOL HOUSE.

From the Rand-McNally Grammar School Geography
(Used with permission of the publishers)

SEC. 6. Any contract for the construction or remodeling of any school building, not in conformity with the requirements of this act, shall be void; and any public school officer or contractor who shall violate the terms and conditions of this act, by letting or accepting any contract for the constructing or remodeling of any public schoolhouse or school building not in conformity with this act, shall be deemed guilty of a misdemeanor, and shall be subject to a fine of not less than fifty dollars nor more than five hundred dollars for each offense.

We believe that the standards for school architecture, including the proper seating, heating, lighting, ventilation and ornamentation of school buildings should be as definite as the standards for teaching. The law should fix the dimensions and all other requirements of school buildings as well as the size and character of school grounds.—*From declaration of principles adopted by unanimous vote of the National Educational Association.*

The Rural School Problem: A Solution.

CONSOLIDATION OF SCHOOL DISTRICTS, CENTRALIZATION OF SCHOOLS,
AND PUBLIC TRANSPORTATION OF PUPILS.

I have great faith in the rural school, in its powers, and of what it may do for the individual pupil, but I think the result of its work on the average does not compare with the work of the best city schools, and cannot under the present conditions. How to improve the present conditions is a serious problem, and I know of but one solution. Rural mail delivery is now spreading through this western country. Roads are being improved. Telephones are coming into common use in the country as well as in the cities. Several counties in the eastern part of the state have lately organized county telephone systems, and before long all calls for physicians, for supplies and provisions, for broken castings for farm machinery, for twine for the binder, for drugs and medicines and for hundreds of other little things will be by telephone, and thereby one-half of the time usually expended in securing them will be saved.

We *must* enrich rural life and increase the advantages of the farmer and his family in order to counteract the flow of humanity from country to city. A census bulletin issued last year states that the percentage of population of the United States in cities of 8,000 or more inhabitants has steadily increased each decade. It was 3.4 per cent in 1790, 12.5 per cent in 1850, 22.6 per cent in 1880, 29.2 per cent in 1890, and 33.1 per cent in 1900. The percentage of our population that lived in cities of 4,000 inhabitants or more in 1880 was 25.8; in 1890, 32.9; and in 1900, 37.3. These figures are significant. They mean that from 1880 to 1890 seven persons in every one hundred of our population moved from country or village to city and none moved back. From 1890 to 1900 four or five persons in every one hundred moved from country or village to city and none moved back. What shall we do to be saved from our great cities? Shall we permit the decay and destruction of our pure country life, or shall we endeavor to bring some of the great comforts and conveniences and advantages of city life into the country?

Now for years we have been working at cutting up this state and

its counties into small school districts. Schools of a few pupils are the rule, and large schools are the exception. What inspiration can the pupils of a school of three or four or half a dozen have to do good work? There is no life, energy, inspiration, emulation or desire to excel. The school is dead spiritually and intellectually, and I have seen many a small school that might as well have been discontinued as far as practical results were concerned. You may be doing well under the conditions, but what are the conditions? How could they be much worse? Poor, battered old schoolhouses, sometimes lacking paint, with cannon-ball stoves, and cheerless yards; while in our cities we are building modern, scientific structures, correctly heated, ventilated, lighted and seated, often built of brick, sometimes with stone foundations and with beautiful surroundings. Many of the best schools of the state are in towns employing from three to six teachers. There they have but two or three classes in each room, with all the rooms in one building, a principal who may know what each class is doing, thereby securing better and closer supervision than is possible in larger places, and a janitor to look after school property.

Why do you not have the same in your rural communities? It is not an impossibility. Let me suggest to you what has been done in some of the eastern states. Thirty years ago in Massachusetts they began centralizing their rural schools by public transportation of pupils in vans or wagons. About ten years ago the plan had reached Ohio, and in the last few years it has spread into Indiana, Illinois, and is now being strongly advocated in Iowa. Briefly the plan is this: Instead of nine rural districts with about four sections of land each, teachers with salaries of about \$35, and an average enrollment of twenty pupils, we have in the center of the township a brick building of four rooms, with forty-five pupils in each room, and two or three grades only. We may have a principal of considerable training and experience, who receives a salary of from \$60 to \$75, and teaches the highest room. The three other teachers receive about \$45 each. There is a janitor who looks after the building, its heating plant, its toilet rooms or outbuildings and the grounds generally. There may be sheds in which the horses are kept during the day. The pupils are gathered from various parts of the township by covered vans or wagons that start at 7:45 A.M., or at a stated regular time, day after day, and cover an estab-

lished route, picking up the children along the way and delivering them at the schoolhouse at about 8:45; distributing them again after four o'clock in the afternoon. Where the plan has been in operation, the drivers selected are clean, capable, sober men, not given to profanity or tobacco, and are paid \$25 or \$30 per month. They furnish their own team and wagon, with lap robes, and as a rule, carpet their vehicles and provide seats; let me say right here, that in bad weather, in rain or storm or strong wind, I would rather my child would ride five miles in such a vehicle than walk one or two miles. In pleasant weather, I would just as soon have him walk as ride.

CONSOLIDATION OF SCHOOLS

To overcome the many disadvantages in the present rural school system in Nebraska, and for the purpose of giving every farmer's girl and boy in this noble commonwealth opportunities equal to those of the girls and boys of the village and city, we recommend to the careful consideration of every rural school board and to the fathers and mothers in these rural districts the consolidation of schools and the transportation of pupils. Consolidate, or centralize, the weak districts into a common central school, conveying the pupils from every part of the greater district or the congressional township to and from the central schools by means of covered vans or wagons, in charge of clean, capable, careful drivers. Such a plan would now be legal, as the six-mile limit in the formation of school districts has been removed. And we already have the transportation law. Notice the following provisions of Nebraska School Laws.

1. One district may be discontinued, and its territory attached to other adjoining districts, upon petitions signed by one-half of the legal voters of each district affected. (Subdivision 1, Section 4, Fourth Condition.)

2. The six-mile limit in the formation of school districts has been removed, and districts may now be formed extending more than six miles in any direction.

3. The district board may (and usually should) close the weaker and smaller schools in a district and transport the pupils at public expense to any other school in the district. A board of education of a city, or a board of trustees of a high school district, by a two-

thirds vote of the entire board, or a district board of any school district in this state when authorized by a two-thirds vote of those present at any annual or special meeting, is hereby empowered to make provision for the transportation of pupils residing within said district to any other school (within said district) to which said pupils may lawfully attend, whenever the distance from such schools shall render it impracticable for said pupils to attend without transportation. (Subdivision 5, Section 4b.)

4. Or, the district board may close school and transport their pupils at public expense to a neighboring district without forfeiting the state apportionment. A board of trustees of a high school district, or a district board of a school district in this state, when authorized by a two-thirds vote of those present at any annual or special meeting, is hereby empowered to contract with the district board of any neighboring district for the instruction of (all) pupils residing in the first named district in schools maintained by the neighboring district, and to make provision for the transportation of said pupils to the above-named school of the neighboring district under the conditions named in the preceding section; Provided, That school districts thus providing instruction for their children in neighboring districts shall be considered as maintaining a school as required by law; Provided, further, That the teacher of the last-named school shall keep a separate record of attendance of all pupils from the first named district and make a separate report to the director of said district.

This idea of consolidation and transportation is not original with us. It has proven a success in many states east of Nebraska. The merits of the plan may be briefly stated as follows:

1. It permits a better grading of the schools and classification of pupils. Consolidation allows pupils to be placed where they can work to the best advantage, the various subjects of study to be wisely selected and correlated and more time to be given to recitations. Pupils work in graded schools, and both teachers and pupils are under systematic and closer supervision.

2. It affords an opportunity for thorough work in special branches, such as drawing, music and nature study. It also allows an enrichment in other lines.

3. It opens the doors to more weeks of schooling and to schools of a higher grade. The people in villages almost invariably

lengthen the school year and support a high school for advanced pupils.

4. It insures the employment and retention of better teachers. Fewer teachers are required, so better teachers may be secured and better wages paid.

5. It makes the work of the specialist and supervisor far more effective. Their plans and efforts can all be concentrated into something tangible.

6. It adds the stimulating influences of larger classes, with the resulting enthusiasm and generous rivalry. The discipline and training obtained are invaluable.

7. It affords the broader companionship and culture that comes from association.

8. It results in a better attendance of pupils, as proved by experience in towns where the plan has been thoroughly tried. Attendance is from 50 to 150 per cent greater, more regular and of longer continuance, and there is neither tardiness nor truancy.

9. It leads to better school buildings, better heating, lighting and ventilating, better equipment, a larger supply of books, charts, maps and apparatus. All these naturally follow a concentration of people, wealth and effort, and aid in making good schools. The larger expenditure implied in these better appointments is wise economy, for the cost per pupil is really much less than the cost in small and widely separated schools, but the cost in nearly all cases is reduced. Under this is included cost and maintenance of school buildings, apparatus, furniture and tuition. This expenditure may be inaugurated gradually, by removing four or five of the better school buildings to the central location for temporary use.

10. It quickens public interest in the schools. Pride in the quality of work done secures a greater sympathy and better fellowship throughout the township. Pupils are benefited by a wider circle of acquaintance and culture resulting therefrom. The whole community is drawn together.

11. The health of the children is better, the children being less exposed to stormy weather, and avoiding sitting in damp clothing.

12. Public barges used for children in the daytime may be used to transport their parents to public gatherings in the evenings, to lecture courses, etc.

13. Transportation makes possible the distribution of mail throughout the whole township daily.

14. Finally, by transportation the farm again, as of old, becomes the ideal place in which to bring up children, enabling them to secure the advantages of centers of population and spend their evenings and holiday time in contact with nature and plenty of work, instead of idly loafing about town.

We are in the midst of an industrial revolution. The principle of concentration has touched our farming, our manufacturing, our mining and our commerce. There are those who greatly fear the outcome. There are those who prophesied disaster and even the destruction of society on the introduction of labor-saving machinery. We have adjusted ourselves to the new conditions thus introduced. Most of us believe that we shall again adjust ourselves to the new industrial conditions. The changes in industrial and social conditions makes necessary similar changes in educational affairs. The watchword of today is concentration, the dominant force is centripetal. Not only for the saving of expense, but for the better quality of the work must we bring our pupils together. No manufacturing business could endure a year run on a plan so extravagant as the district system of schools.

The Passing of the District School

BY M. VINCENT O'SHEA

SCHOOL OF EDUCATION, THE UNIVERSITY OF WISCONSIN

For many decades the little red schoolhouse has occupied a coveted place in the affections of the American people. It has been generally believed, whether justly or not, that most great men have learned how to shoot in the district school; the lessons which have been taught there could never be learned anywhere else so well, it has been widely claimed. But those who attribute such virtues to the old-fashioned district school rarely attempt to show just wherein its peculiar worth lay. Ordinarily one would think that a school containing pupils ranging all the way from a-b-c tots to voters taking a round of algebra, and all taught by a single teacher recently graduated from the district school herself, working without apparatus and with text-books long since superannuated,—one would expect such an institution to be greatly handicapped in all its processes. And people in our day are coming to just this conclusion. They are realizing that because great men were bred in the country is not certain evidence that the district school made them great, or at least that it could not have been of far greater benefit to them. There are many who believe that the disadvantages under which the district school has labored have prevented it from doing the most for its pupils, and this is made especially manifest in modern life, when so much more is demanded of individuals than was expected or required a half century ago.

So the most important movement now in progress affecting the education of children in the country is that which looks toward the improvement of the rural schools by consolidating the smaller districts into central graded schools. It is well known, of course, that the experiment has been tried in several states and has been found to be entirely feasible, and most people think eminently desirable, although it is true that there is vigorous opposition to it in every community in which it has not been tried. The reports of state superintendents which come to hand all set forth the advantages of consolidation, and they are urging it upon the schools under their jurisdiction.

The most important of the reasons for absorption of the lone and solitary district school into a larger central school, equipped with an adequate number of teachers and with suitable appliances for teaching in an efficient manner, will be evident to any one who will give the question some attention. For one thing it is an expensive matter to keep all the original district schools running full time and manned with competent instructors. It is more expensive in a certain sense in our day than it was twenty-five years ago, because the drift of people cityward has left almost pupilless communities once quite populous with youngsters of school age. A century ago four per cent of the people lived in cities; now thirty per cent live there. The Hon. G. T. Fletcher, discussing the situation in Massachusetts, says:

"Within the last fifty years changes have been wrought in social life and conditions. The increase of population and wealth in centers of commerce and manufacturing is both a cause and a result of an exodus of the farming population to the cities and large towns.

"In many rural communities farms are abandoned, or only the 'old folks' left at home, to pass the remnant of their days, while the farm constantly depreciated in value. The young, vigorous element of the population left home to work in store or factory. Families remaining in the 'hill towns,' or coming to them, had few children, and as a result the schools became small, the local interest in them often decreasing in the same ratio. These changes came in different degrees of severity to different towns. Those most favorably situated for farming purposes 'held their own' to quite an extent, in adult population and wealth, but the number of children constantly lessened, and the schools, though not generally reduced in number, were reduced greatly in attendance. Occasionally schools were united to increase the number of pupils, or a winter term was held in the center of the town for the older pupils of all the districts. Just when and where consolidation on a small scale began we cannot tell. The cause and the fact of a beginning are both evident. There came to the people, slowly at first, a realization that the interest, economy and efficiency that had in many cases characterized the large number of schools of former days were wanting. The struggle to maintain the same number of schools as when the adult population was greater, the property valuation was twice as large, and the town had three times as many children of school age, was as

painfully evident then as it is now. The school had been the common center of interest, and the thought of its closing was a shock to the people. No wonder a deep-seated feeling existed, and still continues, that home interest and property valuation would suffer from the discontinuance of the local school."

Late reports show that Maine has over a thousand schools with less than thirteen pupils. Vermont has in the neighborhood of two hundred with less than seven pupils. In 1897 New York had 3,090 school districts having an average daily attendance of ten or less, but at the close of last year there were 3,550 such schools, making an increase of 461 during the past four years. And this phenomenon is more striking and significant when it is taken in connection with the further fact that the total number of districts in the state had been reduced during the period indicated from 10,965 to 10,791, a decrease of 174. Somewhat similar conditions are prevailing in the other states, at least in the older states, showing that the movement of pupils is away from the rural regions and towards the centers of population. Wisconsin has in the neighborhood of two hundred schools with less than six pupils, and a number of cases were reported where there were only two or three regular attendants. In some instances the climax was reached when a single regular attendant was taken sick, and the teacher was left without any one to instruct.

In the old-time district school with fifty or more pupils of all ages from four to twenty-one, there were many great obstacles to effective teaching, but the school of two or three pupils, or even ten, is at a still greater disadvantage, for the reason that the stimulus which comes from a healthy rivalry and the reaction of pupils upon one another is lacking. Moreover, in a school of these dimensions there will usually be but one pupil in a class, and this is not enough to inspire a teacher to do her best. Quintilian indicated long ago that a tutor could instruct a number of children better than one alone, since numbers would rouse him to genuine effort and call forth the best that is in him.

Then, too, no community can be induced to provide proper facilities for the teaching of but half a dozen children. As a result things are going to the bad in the districts where pupils are growing steadily fewer in number. The buildings are in a decadent condition, there is no encouragement to replace worn out reference

books and illustrative charts in schools that were at any time so fortunate as to have had anything of the sort; and worst of all people will not get a competent teacher when she can give instruction to no more than a dozen children. In one of the most prosperous communities in Illinois a simple, immature, helpless girl was engaged last fall to take charge of a district school where there were about fifteen pupils pursuing studies all the way from the alphabet to algebra. She was about as unfit as one could well be to take charge of any of the pupils, but particularly of two or three of the older boys who knew as much of the world as she did, and had as much strength of character. It is pitiful to think of the schooling they will get this year in that district school; and what is true of that community is true of many another, as the readers of this note can doubtless testify.

People are opposed to the plan of centralization mainly because the different communities do not want any authority taken out of their hands. In most localities the trusteeship of the district school is the only public office to which many of the men ever aspire, and they look with much disfavor upon any plan which would prevent them from serving their fellow-citizens, and incidentally from obtaining local fame. The school district is the smallest unit of government, but it is not the least jealous of its prerogatives, and it must be expected that the proposal to merge this unit into larger units will always arouse many apprehensions and arouse a good deal of hostile feeling. But this objection can be met in a way by so arranging it that the various communities entering into consolidation may be represented in the central school board. The central school then would be controlled by a board of trustees made up of delegates from each district uniting. This mode of procedure is, of course, followed in the government of all bodies where there are communities or localities or wards with interests more or less distinct. Every city has its sections with a man to represent each in the common council; so in this consolidated school district the original districts will constitute the wards or sections, each entitled to one or more members to the central school council.

Another objection urged is the one of increased cost. It is said that it will be more expensive to have a central school to which pupils must be conveyed in some way. In most of the states where the plan is in operation children are conveyed to the central school

by means of carriages which call for each one in the morning and deliver him at his door at night. To one who has not figured it out this would seem to involve great expense; but when the saving in teachers' wages is considered, and also in the maintenance of a number of school buildings, it can be realized that there is a possibility of gain instead of loss in centralization. In Kingsville township, Ohio, the cost per pupil for a year's schooling has been reduced from about \$23 to \$12. The township saved a thousand dollars in three years. There has been a saving in Madison county in the same state of \$4 per pupil. Winnebago county, in Iowa, saved nearly \$500 in a year. The report of the work in Connecticut states that eighty-four schools were closed, 849 pupils were transported to central schools, and there was an increase in cost in only a single case. Similar figures have been presented in the reports of other state superintendents, all of which indicate that centralization can be carried out with a saving in expense to the community.

Another prominent objection to the scheme of centralization is that it will lead to a depreciation of property in the districts in which the school is closed, but this fear has been shown to be entirely unfounded. As Superintendent Fulson, of New Hampshire, has said, "a schoolhouse on every farm would not repopulate the rural sections of our state." Quite the opposite effect, indeed, would be realized from the conveyance of pupils to an efficient central school. People who now live in the city that they may give their children the advantages of modern schooling would, under the centralization system, be induced to go to the country if they could secure the advantages they now do in the large centers. There seems to be some evidence of this forthcoming already from the older states, as New Hampshire.

It is claimed again by many that it would be a severe strain upon a child to ride a long distance each day to and from a central school. Several state superintendents who sent out circulars asking for statements of opinion on the matter received answers to the effect that children would have to endure great hardships in transit. They would have to ride with wet feet; they would be improperly dressed for such experiences, etc., etc. But in most places where the plan is working the children have no opportunity to get their feet wet. The carriage calls for them at the door and returns them to the door. The old-fashioned method of walking a mile or two to

the local school entailed many more hardships than the plan of riding in properly equipped conveyances. In many states the carriages have means of heating in the coldest weather, and it is inserted in the contracts that those who engage in the transportation of pupils shall provide warm blankets and other conveniences for all children.

Many feel again that they do not want their children to be so far away from their care all day. But in the local school they are away all day, and the average parent never sees the school from one year's end to the other, and the child might as well be a dozen miles away as one; he is out of reach anyway. There have been some fears expressed that the central school plan would result in injury to the morals of children, since bringing so many together would provide opportunity for the dissemination of bad manners and vices; but quite the contrary result may reasonably be expected from consolidation. One of the most serious defects of the local school is due to the unhealthful suggestions received by pupils from the out-buildings. They get out of repair, there is none to look after them, and then they become objects for the pens and knives of those whose minds are not altogether wholesome. But in the central school, where greater care would be exercised in these matters, this source of contagion could be wholly *done away* with. Then, with better trained teachers and with suitable provision for play grounds, the pupils would be kept together under conditions which would develop the best in them instead of the worst. As it is now in the local school the children run together without guidance or suggestion from the teacher. She is usually incapable of leading children in their out-of-door life, and really exercises no influence over them; but it would certainly be different with teachers who have had some training in the ways of getting hold of children out of school as well as in it.

The advantages of such a system are numerous and vital. In every community where the matter has been investigated it has been found that the attendance has been increased, and there has been less truancy, less irregularity. The health of children has been improved, due principally to more healthful condition of school buildings, they being better heated, lighted, ventilated and cleaned. There is greater incentive and enthusiasm on the part of pupils when they are brought in contact with others out of their immediate neighborhood. The whole tone of the school life is improved;

individual pupils get to know a larger number of people and lose the awkward, bashful, diffident manner characteristic of the country child in isolation. This plan gives an opportunity to provide special training in drawing and music which the local school has to do without absolutely. Most important of all, this plan promotes social growth and organization through the unifying influence of the children coming in contact with larger numbers, and the interests of the home extending out to a broader community. The farm becomes less isolated. The children going to a central point each day will bring back much that will unite any one farm to others in a broader unity.

—*The World Review.*

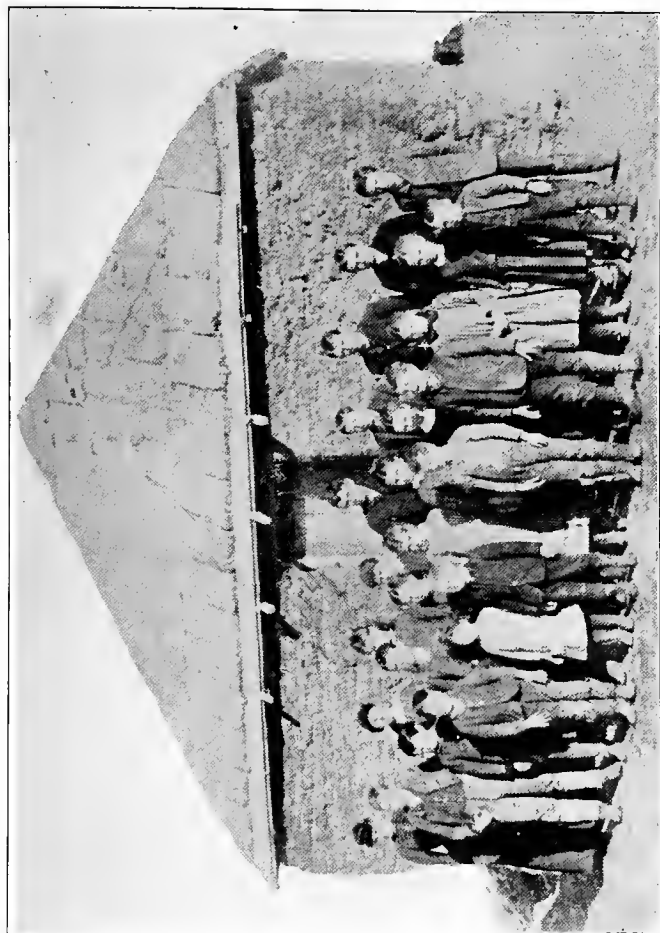
The Centralized Schools of Ohio

REPORT OF A VISIT OF SUPT. O. J. KERN OF WINNEBAGO COUNTY,
(ROCKFORD) ILLINOIS, TO THE CENTRALIZED SCHOOLS OF
OHIO, OCTOBER, 1900

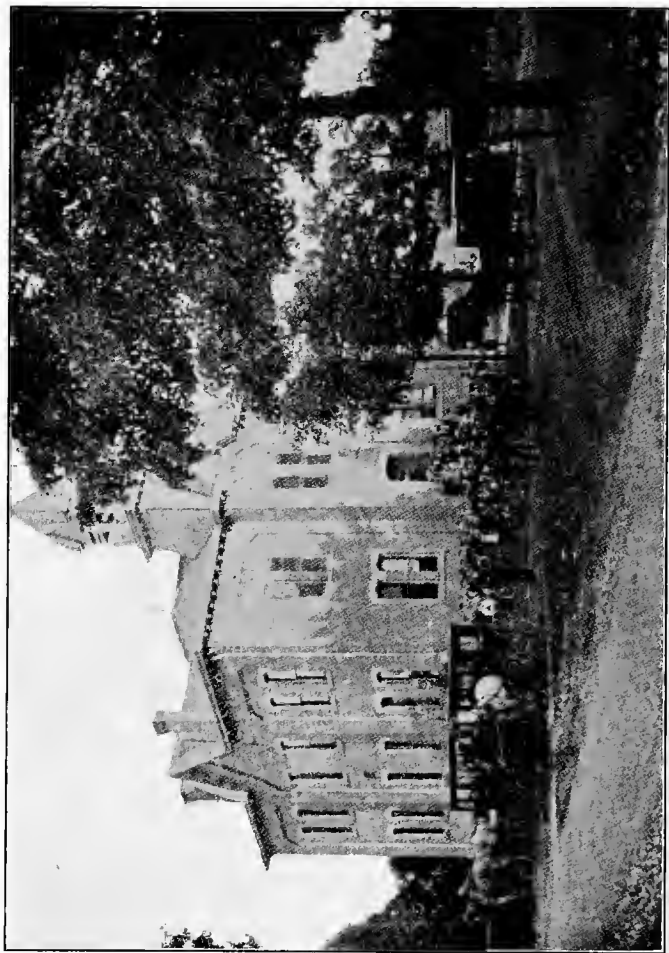
It was an extremely interesting and profitable trip. So numerous have been the inquiries for information concerning the improved system for district schools in Ohio that, as a result, this report is given in the hopes that what is herein described of our visit to Ohio may lead to better things for Illinois. Our tour of inspection was through Lake, Ashtabula, Trumbull and Geauga counties, some of the finest portion of the Western Reserve. This country was originally settled by people from the New England states. We were received with utmost kindness wherever we went, and no pains were spared to make our visit pleasant and profitable. Last, but not least, the weather was all that could be desired, and our drives over a beautiful country with every evidence of prosperity were thoroughly enjoyable. Enough frost had touched the maples to make the leaves scarlet and golden, and with the glimpses of the blue waters of Lake Erie made a scene never to be forgotten.

The first place we visited was Perry, Lake county, where there is a township high school. The Principal, Prof. Morrison, is a pioneer in the matter of centralization. He assured us that the experiment was no longer an experiment, that the new movement was the logical solution of the country school problem, and that centralization of districts with transportation of pupils had come to stay. It gave much better schools with but a slight, if any, increase in the cost to the township. The opposition to the plan has long since died out. This has been the testimony at every place visited thus far. At this particular place, however, there was only one wagon drawing children. So we drove on to North Madison, in Madison township, where three wagons are used. On our way there we saw the first wagon. We stopped at the farm house and talked with the driver. He carried all the children from one district, about twenty in number. His route was five miles long. That is to say, starting at the first home to pick up a child until he arrived at the central school was five miles. Then he drove back home after delivering

the children, thus covering ten miles in the morning. Of course he traveled the same ground after school, thus making twenty miles in all. He got \$1.20 a day for his work. We asked him if he made any money at it. He said he did, as he was working a small farm that did not require all the time and labor of himself and team. We asked him if he had any trouble with the children, and he replied none. He said he was employed by the township board of education, who put him under bond to be careful with the children; to have a safe team; to provide a suitable wagon, covered and provided with curtains, and containing soapstones and lap robes for the severest weather. We asked what objections the parents along the route had to the new plan. His reply was that the only objection was on the part of two or three at the beginning of the route, as they had to get their children ready somewhat earlier than they used to when they went to the district school. Of course the children must be ready when the wagon came. He aimed to start at 7:30 and arrive at the building not later than 8:45. Thus there were no children tardy; none came with wet feet or clothing; the attendance was greatly increased and much more regular. The driver believed the movement had come to stay; that the people would not consent to go back to the old way. A short distance on towards the centralized school we had a very interesting conversation with Mr. Fuller, a member of the Township Board of Education. Mr. Fuller is a public-spirited, prosperous farmer, and believed in giving the country children the best educational advantages possible. And while the new plan did not materially increase the cost, yet the amount of taxes was not the first consideration. He had four boys. One was at home on the farm; another was in Delaware University; a third was in school in Cleveland, while the fourth was in business in Cleveland. His girls were in the centralized school. He knew the value of the new plan and was sure the people would not go back to the old method. The opposition had long since died out, and the bitterest opponents three or four years ago are now the most enthusiastic supporters. They have seen the value of a well graded school, with good teachers, over an ungraded one, with oftentimes indifferent teachers. We visited the schoolhouse during the noon hour and did not have time to see the school in operation. We next drove to Unionville, and had a pleasant visit at a two-room school. The children were fine speci-



DISTRICT SCHOOL No. 16, KEITH COUNTY



CENTRALIZED SCHOOL, KINGSVILLE, ASHTABULA COUNTY, OHIO

mens of the American public school. The Principal, Mr. Adams, was township superintendent for Madison township, and has had considerable experience with centralized schools. His testimony as to the value of the new system over the old and his belief in the permanence of the movement were stronger, if anything, than that which we had heard at Perry and North Madison. The cost had not been increased.

We next visited Kingsville in Ashtabula county, 401 miles east of Chicago. This was our farthest point east. Kingsville is a small village with a township high school. To this school are brought all the children of the township, with the exception of two districts. Four wagons are used, at a cost of \$20, \$25, \$24 and \$28 per month, respectively, for a month of twenty days. The school year is nine months. Five teachers are employed in the building. The testimony of the principal of the school, the town clerk and Mr. Kinneer of the Board of Education was that there was an actual saving in the total cost to the township under the new plan; and while money was expended for transportation of pupils, it was more than saved in the fewer number of schools operated. And as to the increased efficiency of the new centralized school over the scattered schools, that was beyond a question of doubt.

It was here that the Ohio plan of centralization had its origin in 1892. The erection of a new building in one of the districts of Kingsville township brought up the question whether or not it would be better to abandon the school in that district and take the children to the village school at the general expense. In this first case of consolidation in Ohio the schools were centralized at the village school, a village situated about a mile and a half from the railroad. The results, educationally, in the small districts were far from satisfactory. In order to consolidate and transport children at public expense, special legislation was necessary. So the Ohio legislature passed the following bill, April 17, 1894:

"SECTION 1. *Be it enacted by the General Assembly of Ohio,* That any Board of Education in any township, which by the census of 1890 had a population not less than 1,710 or more than 1,715, of any county, which by the same census had not less than 43,650, nor more than 43,660 inhabitants, may, at their discretion, appropriate funds derived from the school tax levy of said township for the conveyance of pupils in sub-districts from their homes to the

high school building of such township; provided, such appropriation for any sub-district shall not exceed the amount necessary, in the judgment of the board, for the maintenance of a teacher in such sub-district for the same period of time."

The Kingsville plan proved such a success that on April 27, 1896, the Ohio legislature passed a bill for the relief of the counties of Stark, Ashtabula and Portage, which provided that the Board of Education of any township of those counties may, "when in its opinion it will be for the best interest of the pupils in any sub-district, suspend the school in such sub-district and provide for the conveyance of said pupils to such other district or districts as may be convenient for them; the cost of such conveyance to be paid out of the contingent fund of said district; provided, the board of any special school district in any county mentioned above may provide for the conveyance of pupils out of the contingent funds, the same as townships aforesaid."

Since then a general law has been enacted, permitting the people of any township at the annual town election to vote "yes" or "no" on the proposition to centralize the schools of that township; i. e., to abandon the small districts and transport the children at public expense to the central school. Such, in brief, is the history of the legislation. And as to the result of the Kingsville experiment, I can do no better than to quote from the *Arena* for July, 1899. It was a beautiful day in October, 1900, that we visited Kingsville, and our inspection of the school, our conversation with the teachers and school officers, our seeing the children loaded into wagons and driven to their homes, made a deep impression on me, at least. But the quotation:

"The residents of the sub-districts of Kingsville township which have adopted this plan would deem it a retrogression to go back to the old sub-district plan. It has given the school system of Kingsville an individuality which makes it unique and progressive. Pupils from every part of the township enjoy a graded school education, whether they live in the most remote corner of the township or at the very doors of the central school. The line between the country bred and the village bred youth is blotted out. They study the same books, are competitors for the same honors and engage in the same sports and pastimes. This mingling of the pupils from the sub-districts and the village has had a deepening and broadening



WAGONS USED IN THE TRANSPORTATION OF CHILDREN IN OHIO



RURAL SCHOOL DISTRICT, LINCOLN COUNTY
Building now Replaced by a Frame Schoolhouse

influence on the former without any disadvantage to the latter. With the grading of the school and the larger number of pupils have come teachers of a more highly educated class. Higher branches of study are taught, the teachers are more conversant with the needs of their profession. The salaries are higher; the health of the pupils is preserved, because they are not compelled to walk to school in slush, snow and rain, to sit with damp, and perhaps wet feet, in ill-ventilated buildings. Nor is there any lounging by the wayside. As the use of indecent and obscene language is prohibited in the wagons, all opportunities for quarreling or improper conduct on the way to and from school are removed. The attendance is larger, and in the sub-districts which have taken advantage of the plan it has increased from 50 to 150 per cent in some cases; truancy is unknown. It has lengthened the school years for a number of the sub-districts; it has increased the demands for farms in those sub-districts which have adopted the plan, and real estate therein is reported more salable. The drivers act as daily mail carriers. All parts of the township have been brought into closer touch and sympathy. The cost of maintenance is less than that of the schools under the sub-district plan; the township has had no schoolhouses to build; it has paid less for repair and fuel. Since the schools were consolidated the incidental expenses have decreased from \$800 to \$1,100 per year to from \$400 to \$600 per year. In the first three years following its adoption Kingsville township actually saved \$1,000."

We left Kingsville feeling that we had traveled nearly 500 miles to a good purpose. Before leaving we had an amateur photographer take snap shots of the wagons, children, school building and ourselves. [See illustration of Centralized School, Kingsville, Ashtabula county, Ohio.]

The schools we visited in Lake and Ashtabula counties were village schools with the children brought to these villages from the outlying districts. In each case there was a saving of expense. Superintendent J. R. Adams of Madison township, Lake county, whose school we visited, says that "under the new plan the cost of tuition per pupil, on the basis of total enrollment, has been reduced from \$16.00 to \$10.48; on the basis of average daily attendance, from \$26.66 to \$16.07. The total expense will be about the same in this district as under the old plan, but the cost per pupil

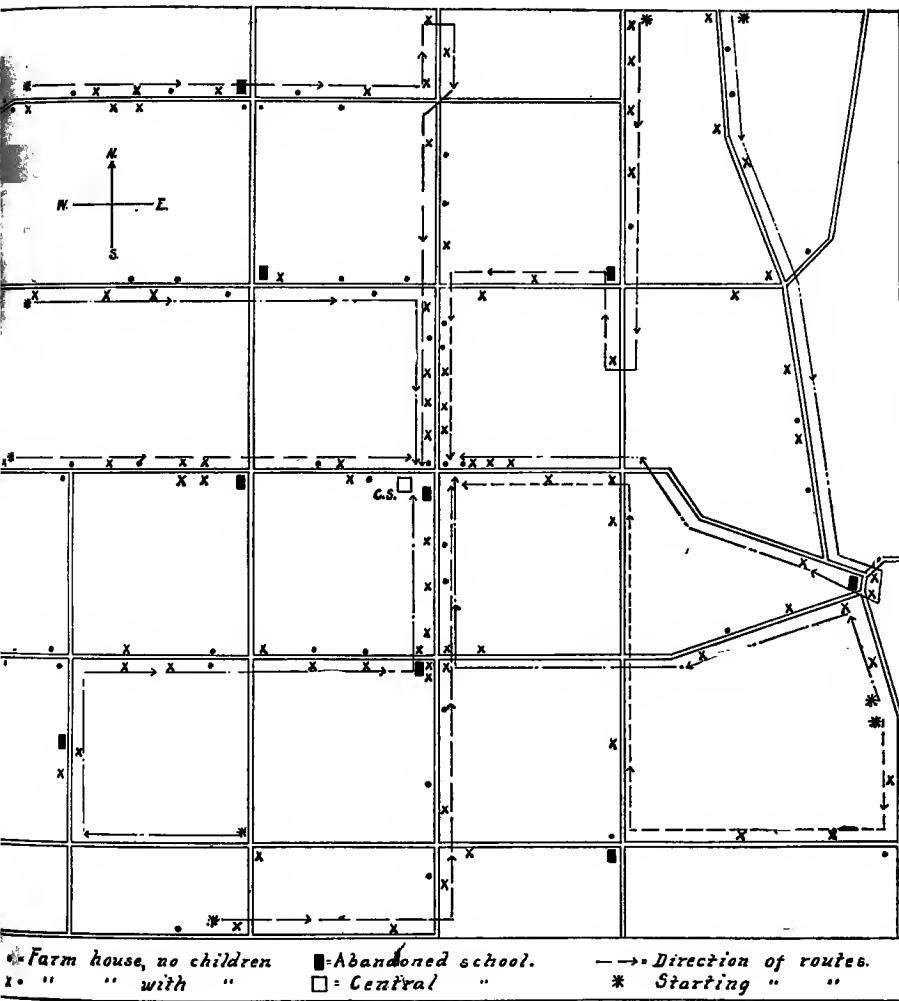
will be much less." This is easily explained when one understands that the school attendance has increased from 217 to 300 pupils since consolidation has been effected.

But we wished to find centralized schools in a purely country township, where there was no village or village school, a place where country life was being preserved. We went thirty-five miles south from Ashtabula and visited Gustavus and Green townships in Trumbull county. The first place visited was Gustavus. This township is exactly five miles square, as are all the townships of the Western Reserve with the exception of those along the shore of Lake Erie. In Gustavus township the town hall is situated exactly in the center of the township, as is the case in Green township. Here was a church, the post-office, a country store and a few houses.

I had a picture of the centralized school of Gustavus township and was anxious to see the real thing. We saw it and all was as represented. The school building is located in the center of the township. The school has been in operation two years. It is a four-room school, having a principal and three assistants. All the children of the township are brought to this central school, and nine wagons are employed in the transportation. [See illustration of Wagons Used in the Transportation of Children, Gustavus township, Trumbull county, Ohio.]

The wagons are provided with curtains, lap-robcs, soapstones, etc., for severe weather. The board of education exercises as much care in the selection of drivers as they do in teachers. The contract for each route is let out to the lowest responsible bidder, who is under bond to fulfil his obligations. The drivers are required to have the children on the school grounds at 8:45 A.M., which does away with tardiness, and to leave for home at 3:45 P.M. The wagons call at every farmhouse where there are school children, the children thus stepping into the wagons at the roadside and are set down upon the school grounds. There is no tramping through the snow and mud, and the attendance is much increased and far more regular. With the children under the control of a responsible driver there is no opportunity for vicious conversation or the terrorizing of the little ones by some bully as they trudge homeward through the snow and mud from the district school.

The following diagram is self-explanatory:



SCALE 1 INCH TO THE MILE

DIAGRAM OF GUSTAVUS TOWNSHIP, TRUMBULL COUNTY, OHIO,
SHOWING TRANSPORTATION ROUTES

The average price per day per wagon is \$1.25 and the length of the longest route is four and three quarter miles.

During the school year 1898-1899 there were enrolled in the grades below the high school eighty-two boys and fifty-two girls; in the high school room seventeen boys and thirty-five girls; making a total in the building of 186 pupils. The average monthly enrollment for the entire school the past year was 163, while the average daily attendance was 77.4 per cent of the total enrollment. This is a fact of great significance. The children are regular and are getting the benefit of such a course.

Keep in mind that this school is not in a village and the children are scattered over twenty-five square miles of territory. The children are not tardy. How do they do it? you ask. Well, they do it, and that is enough for me. Any one who stands in that building, and looks at those children and wagons, must be convinced that here is the solution of the country school problem, because this problem is being solved in the country over six miles from the nearest railroad. There is an organ in every room, and the walls are being decorated with pictures. They have started a library. In the high school room were fifty-two enrolled, with fifty present. Here was an opportunity for the big boys on the farm to get higher education and still be at home evenings secure from the temptations and dissipations of city life. They rode home in the wagons with the children of the lower rooms, and thus were able to be of service on the farm.

The building is a frame structure erected at a cost of \$3,000. It is heated by steam. The principal gets \$80 per month, while his assistants each receive \$27.50. The wages of the assistants should be larger. The drivers receive respectively \$22, \$30, \$18, \$25, \$30, \$32, \$16, \$30 and \$17 per month, making an average of \$1.25 per day. Before the adoption of the centralization the average daily attendance was 125 pupils. It has increased to 144 at the end of the second year, and the principal told us the attendance is increasing all the time. Before the schools were centralized the cost for the entire township was \$2,900. Now it is \$3,156, being an increase of only \$256 annually. And as to the character of the school, who will claim that the nine scattered schools were doing the work of a well-graded four-room school? There is absolutely no comparison. In order to keep up the school and pay off the school bonds, the

township board of education made a levy of nine mills on a valuation of \$373,000. There was opposition to the plan at first. The people who were opposed simply took the ground that the thing had not been done and therefore could not be done. Just as there are always people opposed to any progress. When I was a boy sensible people said a man was a fool to think about binding grain by machinery. They were not ignorant! they were simply mistaken. So those who were opposed to centralization of schools frankly acknowledge their mistake and are found among the staunchest supporters. We have found this true every place we have visited.

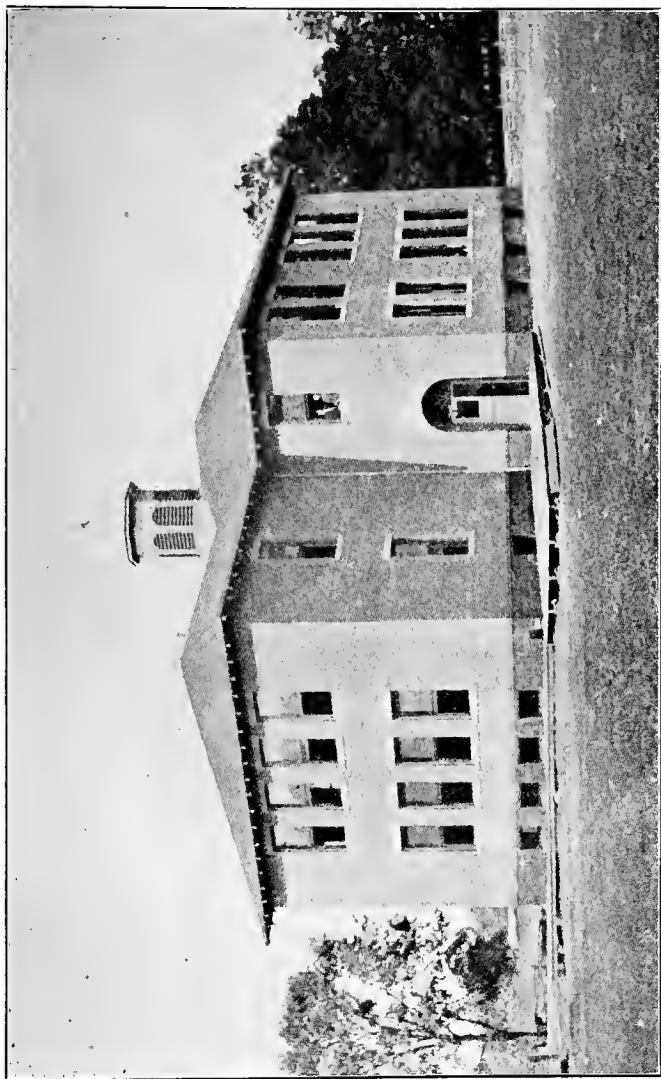
A special committee was sent from an adjoining county to investigate the Gustavus school. The committee was composed of one person opposed to the system and one in favor. They traveled over the township and talked with the people as we did. In their report, out of fifty-four families interviewed only one person with children was opposed; seven of those in favor were formerly strongly opposed, while none that were first in favor of the system are now opposed. The same committee adds: "Although the system costs a little more (the belief is that it is cheaper after building is paid for) yet the people as a whole are highly pleased and are very enthusiastic and proud of their schools. Several of the neighboring townships, after carefully watching the system, have decided to centralize, and the growing opinion is that centralization is in harmony with educational progress."

The committee's report is certainly correct. Bear in mind the roads in this township are but a trifle, if any, better than the average of Winnebago county. In fact, two or three townships of our county have, as a whole, better roads. The people are simply determined to have better schools and will not allow obstacles to remain in the way of their children's fullest and freest development, even if it does cost a few hundred dollars more per year for the entire township. What would \$1,000 more per year on the \$373,000 valuation of Gustavus township amount to? The average tax-payer would not know it. The testimony has been that after the new school building has been paid for that there is an actual saving per capita of children of school age in the township. Then think of the superior value of the new school over the old. It cannot be a question of a few hundred dollars.

While we were at the Gustavus school the principal advised us to drive five miles to the west into Green township, where the people had centralized and put up a fine new brick building at a cost of over \$6,000. The people of Green township had watched the school in Gustavus township for two years, and believed so thoroughly in the new plan that at the last April election voted to centralize and bond the township for a long term to erect a new building. The vote was overwhelmingly in favor of the new school. We drove west to the center of Green township, which is five miles square. This township is eleven miles from one railroad and six miles from another. So it is distinctively rural. To be sure, there is the town hall, a post-office, a church or two, a country store and a few dwellings. That is New England brought to the Western Reserve. We all were enthusiastic over this building for country children. We never saw the like before in the country to take the place of miserable box-car, one-room structures. And the possibilities of such a school, who can measure it? [See illustration of Central School, Green township, Trumbull county, Ohio.]

There are six schoolrooms, with two additional, one of which may serve as a library room and the other as an office and reception room. There is a basement under the entire building, part of which may be utilized for laboratory and gymnasium. The building is heated by steam.

To this building are brought all the children of the entire township. The educational influence of this building over that of eight or nine widely scattered, neglected district buildings is beyond controversy, to say nothing of the sanitary improvement in the way of seating, lighting, heating and ventilation. Such a building may be had in hundreds of townships of Illinois. It would not be a burden to the tax-payers of any township of Winnebago county. Bonds could be issued for thirty years' time, money could be borrowed at 4 per cent. The annual interest on \$6,000 at 4 per cent would be \$240, an amount no larger than the repairs on seven or eight district schoolhouses from year to year if kept up as they should be. One-thirtieth of the principal or \$200 plus the annual interest, \$240, would make a total cost of \$440 for building purposes for the first year, decreasing every year afterwards as bonds are paid off. The total valuation of Owen township, according to the Winnebago county Board of Review for 1900 is, real estate \$253,-



CENTRALIZED SCHOOL, GREEN TOWNSHIP, TRUMBULL COUNTY, OHIO.



DISTRICT SCHOOL No. 41, DAWES COUNTY

622, and personal, \$310,038, making a total valuation of \$563,660. An annual tax of \$440 for such a central building as here shown, on a valuation such as the township of Owen has, is cheaper in the long run than under the present plan.

They began this school in September last. The enrollment is 180, over 150 of last year in the scattered schools. Four teachers are employed. All the children of the township are brought to the school, and eight wagons are employed in the transportation. The campus has about three acres. Shade trees, school decoration, library, etc., will come. How that school can be made the social, literary and musical center of the entire township! What an inspiration it must be to a corps of teachers to work in such a community as that!

In the primary room were all the little ones of the entire township in a beautiful room, while in the high school room were many large farmer boys getting an education they could not otherwise obtain. On the playground all the big boys of the township play baseball. Think what it is to get all the boys of a township, country boys, I mean, on one playground. They will grow up a unity. Each boy, having studied and played with other boys of the entire township, will be stronger for it. When the football team or baseball team or literary contests of Green township can compete with Gustavus township on athletic ground or in town hall, each team will have the backing of an enthusiastic township. In a great many districts there are hardly enough boys to play "two cornered cat." Can you wonder that children get tired of district school after a certain age? I am not sure that I have yet grasped the full significance of what we saw here. If that is good for Ohio boys, why not the same for Illinois?

The day spent at Gustavus and Green township schools was by far the best one in the Western Reserve. As far as educational matters are concerned it was far ahead of anything I had ever seen.

We returned to Ashtabula, fully realizing that it was a good day, well worth our coming nearly 500 miles. I paid a visit to Thompson Center, Geauga county. They did not have centralization, but the special district plan, a modification. It is not so good as centralization, but much better than the old way. They now wish they had complete centralization as in other townships. But

the special district plan was the best they could do then. Certain sections of the township were jealous of the other, and after the most determined opposition, those in favor of better schools at last, by a decree of the probate court, succeeded in getting two districts consolidated. A new schoolhouse was built; a graded school was organized with three teachers; and the children transported themselves. Now instead of nine small schools there are five on the special district plan. They expect to reduce the number.

On my return from Thompson Center I stopped at a district schoolhouse where the school had not yet been centralized. It was a small building, with no shade trees in the yard. On entering the house I found a teacher and four pupils. There were no more in the district. I asked the teacher why this school was not centralized. She replied that it would be next year. The teacher was getting \$30 a month to teach four pupils. She said that for the same money she would rather teach a room of thirty pupils in a graded school than to teach the four she had. Besides the possibility in the way of enrichment of country life which the centralized school promises, it also will bring better roads.

At the Green township central school, where the new \$6,000 brick building has been erected, I asked a high school class how the roads were when they were bad. A young lady said they were real bad, while a young man said they sometimes found it necessary to put four horses to the wagon. The principal said the people were preparing to improve the principal roads over which the wagons ran. Thus better schools bring better roads.

On my return from Ohio I visited the Indianapolis schools, to learn about the new buildings and schoolroom decoration as described in *School Sanitation and Decoration*, a new book being studied by Winnebago county teachers. While there I spent half an hour with State Superintendent Jones, who informed me that centralization of district schools is going on in some parts of Indiana and proving satisfactory in the main. The township system prevails in this state, and the township trustee has power to close small schools and transport the children at public expense. Superintendent Jones was busy digesting reports from all his county superintendents, with reference to the subject of centralization of county schools, thus getting matter together for his biennial report to the governor.

But let us discuss the practicability of this system in Winnebago county, Illinois. There are 118 school districts in the county outside of the city of Rockford. If we deduct from this number the six village and two suburban districts of the county there will remain 110 one-room country schools. Out of these 110 districts, from reports of teachers on file in my office for the school year 1899-1900, there are five districts that had an enrollment of exactly ten pupils for the entire year; thirteen districts had an enrollment of fewer than ten (three of the thirteen having fewer than five pupils); while one school has been closed, there being only one pupil in the district. The cost per capita is very high in such cases, to say nothing of the character of the school. From the reports of township treasurers to me on September 15, 1900, I give the following from one of the representative townships of the county in which there is no village:

	Expenditures for year ending April 1, 1900	No. in Dist. between 6 and 21, June 30, 1900	No. enrol'd in school for year	No. months of school	Salary of teacher per month
District 1.....	\$ 378 53	34	25	8	\$35
District 2.....	293 40	26	21	8	30
District 3.....	314 75	33	17	9	30
District 4.....	436 29	42	28	9	35
District 8.....	321 15	47	32	9	30
District 9.....	243 65	22	12	7	30
District 10.....	194 80	51	28	6½	25
Total.....	\$2182 57	255	163	av. 8	av. \$30

Several other townships have reports of the same general character. From the above table will be seen that it costs \$2,182.57 to educate 163 children (for none of this expenditure is for building purposes) a per capita of \$13.39. Of the 255 persons of school age only 163 are in the district schools. A few may go to the Rockford high school or business college. It is not true that the most capable boys and girls are the children of parents of the most means, who are thus able to pay board and tuition at a distant high school, while the poor children can never hope for school education any better than the common country school affords.

To quote from an article by "Taxpayer" in an Ohio paper of December 26, 1899: "We believe that in this age of steam and

electricity, in which human ingenuity and human endurance are taxed to the utmost and in which the educational qualifications were never more imperatively demanded, that our boys and girls of the country districts should have educational advantages as nearly equal with those of the boys and girls of the city or special district schools as possible. We do not believe that the centralized system is a great panacea that will cure all the ills with which our educational system is afflicted, but we do believe it is an improvement over the old methods; that it has advantages that will more than repay the expense and inconvenience incident to reorganization. If centralization is a good thing, we want it; if it is not, we want to know why it is not. Because some one we know is in favor of it, or opposed to it, is not sufficient ground upon which either to approve or condemn it. Let us investigate it thoroughly, study over it carefully and form conclusions slowly; also, in forming our conclusions, let us be careful that we consider the merits and faults of the system of centralization, and that we do not approve or condemn it on account of merits and defects that do not arise out of centralization itself, but exist in the school system as a whole or arise from its sources."

In such a spirit as the above we should discuss centralization in relation to the schools of Winnebago county. Naturally one of the first considerations will be the condition of the roads for the transportation of pupils to the central schools. Two or three townships in Winnebago county have as good if not better roads than those of Gustavus and Green townships, Ohio, where the experiment is a success. Centralization of schools and free delivery of mail are bringing better roads, which are needed by the farmer for many things. Under present conditions our farmers manage to get a load of milk to the factory over the worst of roads. The other day I saw a load of milk being drawn by three horses, while over the same road a little child was trudging through the cold and mud to the little old schoolhouse. The creamery was fitted up with improved machinery, while the schoolroom was lacking in nearly everything that goes to make a school. Perhaps there is money in getting a load of milk to a central depot, while there is no money in getting a load of children to a central school. There is where we are mistaken. Good roads and a central graded school will do more to keep our boys on the farm than any other agencies. To quote

from a circular received today with reference to better roads: "Under the inspiration of the flag we love, and the matchless system of free popular education, the youth of the land have awakened to the possibilities that lie within them; they are restless and pulsating with energy; they realize that this is an age of mighty possibilities, hence their intense desire to keep in touch with the outside and everchanging world. The youth of the farm dreams and longs for the intenser life of the city. He feels an almost irresistible desire to get closer to the nerve center. He is not content to be shut in mud-bound for weeks and months at a time. The great outside world is calling him, and his nature answers the call. Country life demands and must speedily have free rural mail deliveries and the daily papers delivered on the date of publication; it demands the telephone; it demands above everything else a complete system of good, hard, every-day-in-the-year roads. They make country life better worth living, they broaden, educate and uplift this most important branch of the commonwealth."

With the free transportation of children our youth can be educated at home; be at home of evenings and not on the streets of a distant city. What I have written above will not appeal to all. There are objectors and always will be. Progress is rarely along the path of the least resistance. The opponents of the movement in Ohio were very determined. But the successful operation of the system has won their approval. It is possible, I suppose, to travel over Illinois and find people who are opposed to better schools, especially if it should cost a few cents more on the hundred dollars. It is possible to find people in Illinois who believe in low wages for the teachers, short school terms, with no library books or apparatus in the schoolroom in order to keep down taxes. It is possible to find people in Illinois who don't care for the school because their children are gone. But to the man, rich or poor, who has a family of growing children, living in a country district, far from a city, any reasonable proposition to better the educational facilities for his children ought to receive from him a candid consideration.

Such common-sense reasons as the following must appeal to the great majority of the district school patrons of Winnebago county and win their support to the centralization of schools, the logical step to improved country school facilities:

1. By centralization all the children of a township can be brought

together in one building, and thus will result the inspiration that always comes from numbers. A school of seven or eight pupils is not calculated to stimulate a boy or girl to do the best work possible. With only one in a class there is no competition, that rivalry which calls forth all the powers of the child. By centralization strong classes can be formed and thoroughly graded as advancement is made. Such classes call forth the best efforts of the members. Such classification and gradation furnish longer recitation periods, thus giving the teacher more time for instruction. There will be uniformity of text-books, thus securing unity of study.

2. By centralization there will be fewer but better teachers in our schools. It will be a case of the survival of the fittest. Better salaries will be paid those who do teach, thus enabling a person to make it possible to acquire a high school and normal training before attempting to teach. There is no inducement for a person to spend time and money in training when the only prospect ahead is a small school at a salary of \$20 or \$25 a month, for six or seven months of the year. Many directors want to hire a cheap teacher, as the school has only a few scholars and it costs too much to teach those few. When a person teaches for \$25 per month, does his own janitor work, pays \$10 or \$12 per month for board, the sum left at the end of each month is not such as would induce a normal graduate to take up such a school. Of course a small school is expensive. Thus in one district in Harlem township the total expenditures for year ending April 1, 1900, was \$233.60. They had school seven months of the year and the total enrollment was 4. Thus the per capita cost for education on the enrollment was \$58.40. A school in Burritt township for the same period had a total expenditure of \$217.99 for a seven months school with an enrollment of 8. The per capita in this instance is \$27.25. A school in Pecatonica township had a total expenditure of \$158.03 for seven months school, with an enrollment of 6. The per capita is \$26.34. A school in New Milford township had a total expenditure of \$269.65 for eight months school, with an enrollment of 10. The per capita was \$26.96. And so on for all the small schools of the county. Thus a premium is put on poorly prepared teachers who are willing to teach for \$20 per month or less. *Centralization will decrease the cost per capita for education, give longer school years and furnish a more efficient teaching force at better salaries.* These are facts that cannot be disputed.

One more phase of the financial question. The following figures show the inequalities of taxation. One district levied \$176 on a valuation of \$38,835; another, \$200 on a valuation of \$31,422; a third, \$230 on a valuation of \$23,826; a fourth, \$200 on a valuation of \$64,250; a fifth, \$250 on a valuation of \$12,696; a sixth, \$300 on a valuation of \$27,944; a seventh, \$150 on a valuation of \$11,052; an eighth, \$100 on a valuation of \$32,154; and so on over the county.* Centralization of schools will equalize the cost of education.

3. By centralization all the children of the township have the same chance for higher educational advantages, which under the present plan only five or ten per cent are able to get by leaving home and going to the city. With a central graded school and a high school course the children can be at home evenings under the care of their parents. The people of the country districts are entitled to receive the fullest benefits for money expended. Better means of education, better training, stronger characters; the possibility of all these must appeal to every parent and to every public-spirited citizen of any community. The course of study may be so enriched that all of the farmer boys may be taught some of the fundamental principles of agriculture, horticulture, etc., without sending them away to a university to learn what may be learned at home. Such a township high school, with good teachers, ought to be able to teach the boys and girls something about formation, composition and care of the soil; feeding standards and selection of animals for the dairy; rotation of crops; constituents of plants, and fruit growing. The State Farmers' Institute of Illinois has asked that the country school do something along this line. In obedience to their request, an elementary course in agriculture has been added to the state course of study for the common schools of Illinois. The farmers of Illinois are doing well in having a college of agriculture built up in connection with our State University at Champaign. But don't stop there. Let the influence of that work extend to every township in the way of an enriched course of study in the township union graded school, and one result will be that more boys and girls will go to the university. The poor man who has been able to send his children only to ungraded district schools will have the pleasure of seeing his chil-

* The assessed valuation is probably nearer the real valuation in Illinois than it is in Nebraska.

dren given the best education the township can afford, and that at a *less per capita cost* to his rich neighbor than heretofore.

4. By centralization the health of the children is guarded. With transportation to a central school there are no wet feet and clothing and consequent sickness and impaired constitutions. Regularity and promptness of attendance are secured. These things do affect the character of children. The average daily attendance is so increased that as a result from 25 to 35 per cent more schooling is secured in a township at a *decrease in the cost per capita*.

5. By centralization we go a long ways toward the solution of the problem, "How to Keep the Boys on the Farm." We bring to the farm that which he goes to the city and town to secure. Such a school may become the social and intellectual center of the community life. With a library room, music, debating club, etc., our boys and girls will hesitate to leave home and such a school for the uncertainties of city life.

And the centralization of country schools has a most vital relation to the cities. It is just as important that there be good schools surrounding Rockford (or any other city) as it is that there be good crops or good roads. I can do no better than quote an excellent editorial from the *Rockford Register-Gazette* of December 1, 1900, entitled

A NEW DAY FOR RURAL SCHOOLS

"The city as well as the country is interested in the new question of the consolidation of the country schools and the promotion of their efficiency as brought about by that policy. The changes brought about by the rural free mail delivery and the rural electric lines are radical, but they are not so important as this advance in the character of the schooling offered to a larger part of the rural children.

"The interest of the larger centers in this small revolution is self-evident. The city draws about half of its best men from the country and is dependent on the country for their healthful constitution, their character and a good start, including schooling. How many a young man has felt the handicap of having his boyhood fortunes cast where a small school, an unfit or indifferent teacher and the lack of rivalry or emulation failed to arouse his interest and threw away his one opportunity. The merging of half a dozen or more inefficient country schools in one good one, with large attend-

ance, inviting schoolhouse and well systematized and graded work is a complete remedy for this drawback, in so far as good schooling can remedy it, and both city and country will profit by the results.

"The photographs obtained by Superintendent Kern of the school accommodations under the new order of things in Ohio and of the vans which convey the children to and from their homes are a demonstration to the eye which scarcely needs further argument. The system has made such progress in Massachusetts that it is now taken for granted. Illinois cannot afford to be behind in such a procession or to let time and opportunity run to waste. Let the young people and the children take it up, as well as the older members of the community and hurry the matter forward. The legislature has something to do in the premises. It were well if no time were permitted to lapse in that duty, too."

Now if Ohio, Indiana, Iowa, Kansas, Massachusetts and New Jersey can centralize and transport pupils, why not Illinois? If it be important that the country boys and girls of those states be given the benefit of higher educational facilities, why not the youth of this state have the same opportunities? Justly have we prided ourselves in the past on the district school. Changing conditions of life, the demands of a higher civilization demand the evolution of the district school, the people's college, to the township graded school, the people's university. Such an evolution must come. The spirit of the twentieth century, the inspiration of grander, nobler things in national thought and character urge us to make the most of our opportunities. There is not the faintest desire on my part to force this system upon the people. I have not the power and would not exercise it if I had. There must be further legislation on the subject in the state before any township can centralize, providing the people are a unit in favor of the change. My duty is to find better methods, to inform you of them, yours to adopt or reject. I hope to confer with you in your schoolhouses about this subject during the coming months. The twentieth century problem in education is the evolution of the country schools (with all the possibilities in the way of the enrichment of country life), the better training of country youth, the hope, the salvation of American democracy.

Tree-Planting Reserves for Nebraska

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF FORESTRY.
WASHINGTON, D. C., January 10, 1902.

The investigation of Nebraska forest conditions by the Bureau of Forestry, begun early in the summer of 1901, has been brought to a close. Much valuable information has been secured concerning the natural forests of the state, the rate of tree growth and the proper species for planting. The investigation covered principally the Platte river and its tributaries, the Pine Ridge district and the Sandhill region. The agents of the Bureau in making this examination traversed more than forty counties.

In the eastern part of the state and along the Platte river the natural timber was studied with reference to its character and tendency to extend its area. An examination was also made of the growth of planted timber both on bottom and upland soil. Special attention was paid to the rate of growth, reproduction and extension of area of the timber in Scotts Bluff, Sioux, Dawes and other northwest counties. In the Sandhill region the purpose of the investigation was to determine the general adaptability to timber growth.

As a result of the investigation the Bureau officials are satisfied that if the proper species are selected, the growing of forest trees in Nebraska can be made a paying investment, especially in the eastern part of the state and along the streams in other parts.

The agents of the Bureau of Forestry have found that the natural forests of the state tend to extend over new areas rapidly when protected from fire and grazing. This is as true of the pine in the western part of the state as it is of the deciduous timber in the eastern section.

It was also found that the rate of growth of the young natural timber in the western half of the state is fairly rapid. This was already known in regard to the timber in the eastern part of the state, but the recent investigation determined this fact for the pine in the western section. Many measurements of young trees of 10 to 12 inches diameter in Scotts Bluff, Banner, Sioux, Dawes, Sheridan and Cherry counties showed an average annual diameter in growth



OLD SOD SCHOOLHOUSE IN SOUTHWESTERN NEBRASKA



‘FOR THE SAKE OF A LITTLE CHILD’

of one-sixth to one-quarter inch—a rate fully equal to that of the same species in the Black Hills.

The officials of the Bureau are convinced that the Sandhills can be forested, and made to produce valuable timber. The tendency of the Sandhills to increase in woody growth is regarded by all who have studied them as strong evidence of their adaptability to timber. Natural timber has been found growing on them in a number of places. For example, both pine and cedar are growing in typical Sandhills along the Niobrara river; and wherever the growth is protected from fire and stock it increases in area year by year. At other points in the hills, even remote from streams, clumps of both pine and hackberry have been found. In addition to this, experimental plantations of pine in the Sandhills have grown with great vigor, during recent years.

The forestation of the Sandhills has seemed so feasible, to those who have studied the question, that for several years a proposition for the National Government to reserve large areas in the Sandhill region for forest planting has been gaining many advocates. This plan is supported by many of the public men of Nebraska, including the Governor, the United States Senators and Representatives from that state and members of the faculty of the State University, and at an early date it will be laid before the Secretary of the Interior. So thoroughly has the Bureau of Forestry become convinced of the practicability of foresting the Sandhills, that it is aiding the efforts to secure the setting aside of a tree-planting reserve in that region.

To ascertain whether public land is available for the proposed reserves, the Bureau has collected data from the different land offices of the state for the preparation of a map showing the exact area and location of the vacant land. This map will be of great value in locating the reserve.

The movement for a tree-planting reserve in the Sandhills is generally approved by the people of Nebraska. If the reserve is established, early preparation will be made for planting on such a scale as will be of great benefit to the entire state.

In any event the results obtained in this investigation will be of great value in determining future plans for the improvement of the forest conditions of the plains region.

Statistical Tables

TABLE I
SCHOOLHOUSES IN NEBRASKA

YEAR	NO. OF SCHOOL DISTRICTS	WOOD	BRICK	STONE	LOG	SOD	TOTAL
1869....	377	.....	.....	.....	.....	.....	74
1870....	797	196	16	6	80	3	301
1873....	1863	848	46	30	138	76	1138
1878....	2690	.....	.....	.....	.....	.....	2231
1881....	3271	.....	.....	.....	.....	.....	2930
1884....	3834	2772	92	29	122	338	3353
1886....	4667	3438	176	66	220	367	4267
1890....	6243	4655	235	45	210	.....	5937
1891....	6417	4932	242	31	184	496	5885
1892....	6510	5159	.....	39	188	528	6234
1893....	6630	5317	267	35	146	734	6499
1894....	6641	5385	294	31	151	732	6593
1895....	6693	5520	293	36	140	698	6687
1896....	6731	5544	298	29	159	690	6720
1897....	6741	5580	302	32	159	622	6695
1898....	6703	5606	304	36	137	593	6676
1899....	6705	5704	313	33	141	517	*6710
1900....	6708	5760	312	42	112	505	†6733
1901....	6674	5831	320	25	132	464	†6773

* Includes 1 iron and 1 baled straw.

† Includes 2 iron.

‡ Includes 1 iron.

TABLE II

DISTRICTS, SCHOOLHOUSES, TEXT-BOOKS, APPARATUS, TAX, 1901

COUNTY	Number of dis- tricts	SCHOOLHOUSES										No. of districts owning text- books	Average No. of mills school tax levied	Number of days school was open
		NUMBER AND MATERIAL						No. built within the year	No. well fur- nished with apparatus, maps, charts, etc.					
		Frame	Brick	Stone	Log	Sod	Total							
Totals...	6674	5831	320	25	132	464	*6773	188	4849	5944	15	900952 Av. 135		
Adams	80	79	10	...	...	...	89	4	75	79	13	13618
Antelope...	112	110	3	...	...	...	113	4	90	100	18	15976
Banner	39	14	...	...	14	2	30	...	13	13	16	1699
Blaine	9	2	...	...	...	6	8	2	6	9	18	862
Boone	79	74	4	...	...	1	79	2	70	76	16	11722
Box Butte..	62	18	2	...	3	32	55	3	42	54	15	5852		
Boyd	68	46	...	...	1	12	59	14	36	62	22	7371
Brown	41	32	2	...	7	3	44	5	5	40	16	4270		
Buffalo	119	123	10	1	...	...	134	1	68	92	18	18274
Burt	69	67	5	...	...	...	72	...	43	62	10	10214
Butler	93	92	2	...	...	...	94	2	94	88	15	14409
Cass	100	97	15	1	...	...	113	...	70	88	9	16743
Cedar	79	93	2	...	...	...	95	1	70	71	16	13151
Chase	59	30	1	...	...	15	46	...	30	46	17	5017
Cherry	97	40	1	1	5	10	57	5	30	68	15	7026		
Cheyenne..	96	32	...	6	6	21	65	...	25	71	20	6844		
Clay	78	85	2	...	...	...	87	3	70	77	15	13190
Colfax	61	63	1	...	...	...	64	2	40	61	10	9976
Cuming	78	74	4	...	...	...	78	...	73	65	12	12335
Custer	250	141	2	...	...	101	244	19	200	200	22	29198
Dakota	38	36	4	...	...	...	40	...	38	38	12	6117
Dawes	92	45	3	...	19	3	70	...	30	70	12	6425		
Dawson	90	102	5	...	...	4	111	4	85	70	20	12878
Deuel	60	25	...	...	...	24	49	2	36	53	16	4421
Dixon	81	79	2	...	...	...	81	1	60	78	15	11740
Dodge	83	84	12	...	...	...	96	5	69	67	15	14263
Douglas	62	71	39	...	...	...	110	2	110	62	6	10883
Dundy	59	40	1	...	...	6	47	...	30	40	13	5066
Fillmore...	91	92	2	...	...	...	94	...	75	91	14	14978
Franklin...	71	69	1	...	...	1	71	...	60	60	18	10245
Frontier	109	90	...	...	2	15	107	3	50	88	21	13418
Furnas	101	95	4	1	...	...	100	2	72	95	15	13975
Gage	154	150	13	1	...	...	164	1	149	152	12	24404
Garfield	24	9	...	...	...	13	22	2	15	22	14	2332
Gosper	62	59	...	...	...	3	62	...	53	56	18	8350
Grant	6	4	...	...	...	3	7	1	5	4	7	851
Greeley	55	55	1	...	...	1	57	4	46	56	17	8351
Hall	72	73	6	...	...	...	79	...	21	72	14	11713
Hamilton ..	98	100	2	...	...	...	102	1	50	96	18	15539
Harlan	80	79	3	...	...	...	82	1	75	80	16	11150
Hayes	71	23	...	1	...	24	48	2	30	45	14	5184		
Hitchcock ..	77	51	3	...	1	20	75	...	50	77	16	8179		
Holt	194	175	3	...	...	8	186	4	150	183	19	20971
Hooker	3	3	...	...	...	...	3	...	3	3	15	401

*Includes one iron schoolhouse.

TABLE II—Continued

COUNTY	Number of dis- tricts	SCHOOL HOUSES										No. of districts owning text- books	Average No. of mills school tax levied	Number of days school was open
		NUMBER AND MATERIAL						No. built within the year	No. well fur- nished with apparatus, maps, charts, etc.					
		Frame	Brick	Stone	Log	Sod	Total							
Howard....	70	68	2	1	...	...	71	2	48	70	16	10397
Jefferson...	100	104	4	...	...	...	108	1	50	100	13	15718
Johnson...	79	76	2	1	...	...	79	4	60	79	12	11875
Kearney...	69	68	2	...	...	...	70	1	51	69	18	10870
Keith.....	44	37	1	...	...	6	44	...	40	44	17	4435
Keya Paha..	56	23	...	...	23	9	55	...	26	46	18	5068
Kimball...	18	13	...	...	...	2	15	...	15	16	17	1961
Knox.....	107	121	2	...	1	...	124	6	66	107	16	14767		
Lancaster..	136	141	16	...	...	...	157	4	148	134	11	22751
Lincoln....	107	103	1	...	1	22	127	2	†	107	20	12143		
Logan.....	15	4	...	...	...	10	*15	3	8	15	18	1612
Loup.....	22	13	...	...	...	8	21	2	12	17	19	1914
Madison...	78	78	9	...	...	...	87	2	53	62	14	12018
McPherson..	10	...	...	...	...	6	6	2	3	3	12	683
Merrick...	56	61	3	...	...	...	64	3	30	56	13	9023
Nance.....	63	64	...	...	...	...	64	...	30	63	16	9986
Nemaha...	81	69	12	2	...	...	83	2	60	68	10	12470
Nuckolls...	91	87	5	1	...	...	93	1	20	78	16	14064
Otoe.....	100	89	18	1	...	...	108	2	101	54	8	16760
Pawnee....	76	72	3	3	...	...	78	2	65	76	10	12298
Perkins....	70	43	1	...	...	12	56	5	42	54	16	4384
Phelps.....	76	72	2	...	...	3	77	1	56	74	18	11093
Pierce.....	66	72	3	...	...	...	75	3	65	65	9	10255
Platte.....	78	78	6	...	...	...	84	5	73	75	11	12609
Polk.....	71	70	1	...	...	...	71	1	54	70	16	10926
Red Willow	82	68	4	...	...	13	85	6	78	83	21	9948
Richardson	104	97	9	1	...	1	108	1	108	74	11	15545		
Rock.....	59	47	...	...	11	2	60	1	51	51	17	5300
Saline.....	117	114	9	...	...	...	123	1	98	114	16	17946
Sarpy.....	40	38	4	1	1	...	44	...	44	42	11	6722		
Saunders...	113	114	4	...	...	...	118	4	104	99	13	18810
Scotts Bluff	32	10	1	1	3	5	20	2	15	15	14	2429		
Seward....	91	96	2	...	...	...	98	...	86	65	11	15135
Sheridan...	105	43	3	...	23	24	93	5	65	78	15	9172		
Sherman...	70	63	1	...	...	6	70	2	61	63	18	9012
Sioux.....	30	12	...	...	11	...	23	...	14	11	17	2572
Stanton....	54	53	1	...	...	...	54	2	54	54	13	8116
Thayer....	97	97	4	1	...	...	102	1	60	96	14	14595
Thomas....	6	3	...	...	...	3	6	...	5	5	23	759
Thurston..	23	26	1	...	...	...	27	...	27	23	22	3032
Valley....	60	56	3	...	...	2	61	...	45	62	17	8772
Washington	56	58	5	...	...	...	63	3	56	53	11	9463
Wayne....	80	81	...	...	...	...	81	3	76	74	13	12674
Webster...	79	80	3	...	...	...	83	1	35	78	16	11847
Wheeler...	33	25	...	...	...	2	27	...	...	25	17	2959
York.....	102	103	3	...	...	...	106	...	79	97	15	16644

* Includes one iron schoolhouse.

† No report.

TABLE III

SMALL SCHOOLS IN NEBRASKA

A detailed statement of the number and distribution of the small rural schools in Nebraska

THE PROBLEM: WANTED—A SOLUTION

COUNTY	ATTENDANCE OF 5 PUPILS OR LESS	ATTENDANCE ABOVE 5 BUT NOT MORE THAN 10	ATTENDANCE ABOVE 10 BUT NOT MORE THAN 15	ATTENDANCE ABOVE 15 BUT NOT MORE THAN 20
Adams	1	7	11	22
Antelope	9	27	35	20
Banner	9	7	4	0
Blaine	2	4	2	1
Boone	2	18	25	13
Box Butte	12	25	13	2
Boyd	1	12	19	16
Brown	3	17	11	1
Buffalo	6	18	44	26
Burt	1	10	22	20
Butler	2	11	16	32
Cass	2	20	25	22
Cedar	5	14	16	14
Chase	11	22	9	2
Cherry	5	26	14	8
Cheyenne	25	27	16	5
Clay	2	3	21	21
Colfax	2	2	12	20
Cuming	1	10	20	20
Custer	19	82	70	35
Dakota	0	4	17	4
Dawes	15	26	13	6
Dawson	6	14	23	15
Deuel	15	24	7	5
Dixon	1	21	19	24
Dodge	0	7	29	21
Douglas	1	4	14	9
Dundy	8	19	10	5
Fillmore	1	11	17	19
Franklin	7	20	14	1
Frontier	6	30	33	24
Furnas	2	16	39	21
Gage	3	22	55	37
Garfield	2	11	5	3
Gosper	4	15	19	10
Grant	0	3	1	0
Greeley	6	19	15	5
Hall	2	6	20	11
Hamilton	2	11	33	20
Harlan	2	21	24	16
Hayes	9	15	13	9
Hitchcock	11	34	16	6
Holt	58	66	29	14
Hooker	1	0	1	0
Howard	1	12	15	20

TABLE III—Continued

COUNTY	ATTENDANCE OF 5 PUPILS OR LESS	ATTENDANCE ABOVE 5 BUT NOT MORE THAN 10	ATTENDANCE ABOVE 10 BUT NOT MORE THAN 15	ATTENDANCE ABOVE 15 BUT NOT MORE THAN 20
Jefferson	2	16	30	17
Johnson	0	10	23	18
Kearney	0	7	22	14
Keith	20	15	4	1
Keya Paha	5	24	16	3
Kimball	7	4	1	1
Knox	6	22	34	25
Lancaster	5	6	32	38
Lincoln	17	30	25	10
Logan	2	3	6	2
Loup	1	9	4	2
Madison	0	14	20	28
McPherson	2	2	2	0
Merrick	4	8	13	15
Nance	6	18	21	11
Nemaha	0	7	25	16
Nuckolls	5	19	19	20
Otoe	4	19	34	18
Pawnee	3	6	21	24
Perkins	31	14	4	22
Phelps	3	7	30	15
Pierce	2	16	22	15
Platte	5	8	22	20
Polk	0	6	18	20
Red Willow	9	23	18	14
Richardson	1	10	24	30
Rock	10	21	13	2
Saline	1	11	32	27
Sarpy	1	4	7	7
Saunders	0	8	19	37
Scotts Bluff	3	5	3	5
Seward	2	14	32	15
Sheridan	18	39	18	7
Sherman	5	21	21	11
Sioux	4	9	5	2
Stanton	2	13	15	11
Thayer	4	13	27	18
Thomas	0	0	0	2 (?)
Thurston	0	5	4	3
Valley	2	18	20	8
Washington	0	4	9	21
Wayne	1	19	30	13
Webster	0	11	25	19
Wheeler	12	8	4	1
York	1	13	24	30
Totals	489	1352	1687	1243

These statistics are taken from the annual reports of the county superintendents of Nebraska for the school year 1900-1901. They show that the small schools are greater in number than most of us knew. There are 489 schools with an average daily attendance of five or less; 1,841 with ten or less; 3,528 with fifteen or less; 4,771 with twenty or less. There are about 6,300 strictly rural school districts in Nebraska. This makes nearly three-fourths of our rural schools in each of which is an average daily attendance too small for vigorous, interesting and profitable work, either educationally and socially or financially. No time need be spent in rehearsing these facts. No school can claim conditions for good work if it have less than twenty-five pupils; yet there are 4,771 rural schools in Nebraska in operation with an average daily attendance ranging from one to twenty pupils. I believe we are all ready to unite upon this proposition—the pupils in these small rural schools must be collected into larger and better schools with better teachers, better paid. "It does not matter how much we deplore the condition which makes consolidation of schools necessary, the fact remains that it is the only rational solution of the question that has been offered."

WILLIAM K. FOWLER,
State Superintendent.

LINCOLN, NEBR., December 31, 1901.

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